GOVERNMENT OF THAILAND

NATIONAL ECONOMIC DEVELOPMENT PLAN

1961–1966

SECOND PHASE 1964–1966

NATIONAL ECONOMIC DEVELOPMENT BOARD
OFFICE OF THE PRIME MINISTER

INSTITUT DE RECHERCHE DES NATIONS UNIES POUR LE D... UN RESEARCH INSTITUTE FOR SOCIAL DEVELOPMENT

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INTRODUCTORY REMARKS

Since the coming to power of the Revolutionary Government, the promotion of the economic and social welfare of the people of Thailand through more rapid economic development has been a keystone policy. Under the leadership of Field Marshal Sarit Thanarat, the previous Government clearly recognized that growing national economic prosperity without inflation would increase not only the real income level and living standards of the Thai people, but would enhance national security and political stability. The earlier achievement of a more equitable social system and fuller development of the national culture would also be possible.

Economic development is essentially a process of increasing the rate of self-sustaining economic growth. This requires the healthy growth of economic capacity which, in turn, necessitates the mobilisation of capital and of natural and human resources in conjunction with sound economic and planning policies and execution. Accordingly, the Government of Thailand established the National Economic Development Board in July 1959 to recommend an integrated, economically sound development plan incorporating specific development objectives and targets, based upon appraisal of available resources and upon careful studies of development projects and performance. The Office of the National Economic Development Board was set up to carry out the necessary tasks under the supervision of the NEDB Executive Committee, the latter comprised of technically qualified persons appointed by the Council of Ministers. On the first of January 1961, His Majesty the King graciously proclaimed the adoption of National Economic Plan for 1961-1966.

The Plan was set forth in two phases, 1961-1963 and 1964-1966. The major reason for the division was to be able to apply the experience gained during the first period in improving the planning for the second period.

A review of progress during 1961-1963 shows that Plan targets were achieved with satisfactory results in terms of the overall objectives. More than anyone, Field Marshal Sarit was responsible for this accomplishment and for the recent rapid economic progress enjoyed by this country. During his lifetime his resolution was ever firm to develop the national economy as rapidly as possible for the greater satisfaction of the material and spiritual needs of the people of Thailand. Unfortunately, he is not with us to witness the result of his vision and leadership.

The National Economic Development Plan for the second period (1964-1966) was prepared in accordance, generally, with the policies and directives of the original Plan. However, progammes, projects, targets and various statistical data have been substantially improved. The major goal is to increase the per capita real income of Thailand at a rate of not less than 3 percent per annum. The expansion of economic activities in the private sector through public development expenditures in power, irrigation, communications, agricultural extension, community development, education, public health and various social services is a key development policy. Within the course of this Plan, two major irrigation undertakings, namely, the Mae Klong and Nan River Projects, will be initiated; the improvement and construction of national highways and provincial roads under plans extending for eight and six years, respectively, will be started; and electric power from the Yanhee Dam and the Krabi electric thermal plant will be generated. Universities at Chiengmai and the Northeast will also be opened, and many other major projects will be carried out. A total in excess of 20,000 million baht in public funds has been estimated for the 1964-1966 economic development budget, including both internal and external sources. In addition, every effort will be made to attract private investment fund's both at home and from abroad. At the same time, the Government will continue to maintain the nation s financial and economic stability.

Field Marshal Sarit left no more important heritage to Thailand than the National Economic Development Plan. My Cabinet and I are dedicated to this Plan and are determined to do our utmost to accomplish its objectives and targets.

I thank the Committee, the Advisory Group and the Executive Committee of the National Economic Development Board and all Government authorities for helping to prepare this revised National Economic Development Plan. I also urge all Government authorities and responsible officials to devote themselves to the development tasks for the benefit of our beloved nation. I finally appeal to all citizens to cooperate with the Government by working diligently for their own benefit and in behalf of the entire nation.

T. Kittikachorn

(Field Marshal T. Kittikachorn)
Prime Minister
Chairman of the National Economic
Development Board
January, 1964

ment authorities and they [illegible] devote themselves to the development [illegible] and the benefit of [illegible] nation. I firmly appeal to all citizens to [illegible] cooperate with the Government [illegible] giving [illegible] of their own [illegible]

[illegible]

Field Marshal Th. Kittikachorn

Prime Minister

Chairman of the National Economic

Development Board

January 1964

[illegible]

Field Marshal Sarit [illegible] National Economic Development Board [illegible]

I thank the Committees [illegible] the National Economic Development Board [illegible] the former National Economic [illegible]

Preface

Thailand's first National Economic Development Plan, which covers a period of six years, 1961-1966, was graciously proclaimed by His Majesty, the King Bhumibhol Adulayadej, on the lst of January, 1961. This Report sets out afresh the objectives, policies and programmes of the Plan; it records in general terms the progress achieved during the past three years; and it describes in some detail the targets set, the expenditure envisaged and the specific projects and programmes proposed to be undertaken during the remaining three years. It also attempts to put the present Plan in the perspective of a scheme of long-term development extending over the next 10-20 years.

At this midway stage it can be said with confidence that progress has so far been well up to expectations. But the gratifying results achieved cannot be attributed wholly to the efforts of the Government and people of Thailand. Favourable weather conditions and a keen world demand for an increasing number of the country's products have been important factors in the economy. If the recent rate of progress is to be maintained or surpassed, greater development expenditure, and, therefore, greater mobilisation of resources by Government, and greater productive effort by the people of Thailand will be called for.

This Report, which embodies the revised Plan, was considered in its Thai edition and approved on the 18th of December, 1963 by the National Economic Development Board presided over by the Prime Minister. The Cabinet on the 7th of January, 1964, approved the adoption of the revised Plan for the second period 1964-1966, to be effective the lst of January, 1964. The present English edition incorporates the essential substance of the Thai version and, in addition, corrections and other modifications based on information received after the latter went to press.

Preface

The first edition of the National Economic Development Plan [illegible] covering a period of six years, 1961-1966, [illegible] originally published [illegible] Kingdom [illegible] 1st of January 1961. This [illegible] set out [illegible] the objectives, policies and programmes of the [illegible] in general terms the [illegible] during the past three years and [illegible] the [illegible]

[illegible] people of Thailand will [illegible]

This Report, which supersedes the revised Plan [illegible] in the first edition and appeared on the 29th of December, 1963 by the National [illegible] Development Board [illegible] by the Prime Minister. The Cabinet on the 7th of January, 1964, approved the adoption of the revised Plan for the second period 1964-1966, to be effective the 1st of January 1964. The present [illegible] edition incorporates the essential features of the Plan revision and, in addition, corrections and minor modifications based on information received after the latter went to press.

Explanations

1. The National Economic Development Plan covers the period from January 1, 1961 to September 30, 1966, inclusive. This period includes six fiscal years, namely, January 1-September 30, 1961, and the five succeeding 12-month fiscal years beginning October 1 and ending September 30. The financial and international trade data are expressed on a fiscal year basis, with adjustments, however, in the 1961 fiscal year when required for purposes of 12-month comparisons.

2. Gross national product, income and capital formation data are on a calendar year basis, that is, from January 1-December 31. Agricultural production data, generally speaking, are on a crop year basis, but industrial, mineral and other production data are for calendar years.

3. Reference is made in the Plan to Changwads or Provinces, of which there are 71 in Thailand, and to Amphurs or Districts, of which there are approximately 500.

4. The maps and related data in this Report are not necessarily in agreement since the latter information is more current.

5. Values are expressed in baht which may generally be taken as the equivalent of 21 baht to the U.S. $1.00.

6. B.E. 2504 refers to the 1961 calendar year, B.E. 2505, the 1962 calendar year, etc.

7. Rai is a unit of measure equivalent to 1,600 square, or approximately 0.4 acres.

PART I - THE PLAN AND ITS ACHIEVEMENT

Chapter 1

Thailand's Economic Situation and Long-Term Outlook

1. A study of Thailand's economic situation during the past ten years reveals that the country enjoyed a satisfactory rate of economic growth during the period. The national income increased at the rate of approximately 5 percent per annum, permitting an annual rise of more than 2 percent in per capita income. Capital formation grew at an increasing rate, constituting close to 18 percent of the gross national product in the latter years. International trade, a most vital element of the national economy, more than doubled during this period, the annual level of exports rising from 4.6 billion baht in 1952 to 9.5 billion baht in 1962, while the level of imports increased during the corresponding period from about 5.5 billion baht to 11.5 billion baht per year. Although there were annual deficits in the balance of trade, there were no serious balance of payment difficulties since the gap in foreign exchange requirements was covered by foreign grants and loans, private foreign investments, and existing foreign exchange reserves.

2. The expanding international trade, coupled with the Government's recent encouraging performance in tax colletion and its sound fiscal policies, succeeded in assuring the financial stability conducive to economic growth. This enabled the Government in October 1963 to establish the par value of the baht at 20.80 to the U.S. dollar.

3. There were, however, some years during the past decade when the economy experienced some depressive events, e.g., a decline in primary export prices in 1953 and 1957 and a big fall in agricultural production in 1957/58. The fact that the recovery and expansion both in production and export could take place in a remarkably short period of time despite the accompanying rapid population increase well illustrates the great growth potential of the country. Another indication is that during recent years, apart from the traditional exports (rice, rubber, tin and teak), other products have been gaining in economic importance, particularly new agricultural export commodities resulting from Thailand's crop diversification policy. On the other hand, the trade gap has widened as the development efforts of the Government of Thailand and other factors have sharply increased the demand for imported capital and other goods. This trend is being closely watched and measures are being taken to reduce the trade disparity without adversely affecting the growth of the economy.

Basic Economic Problems

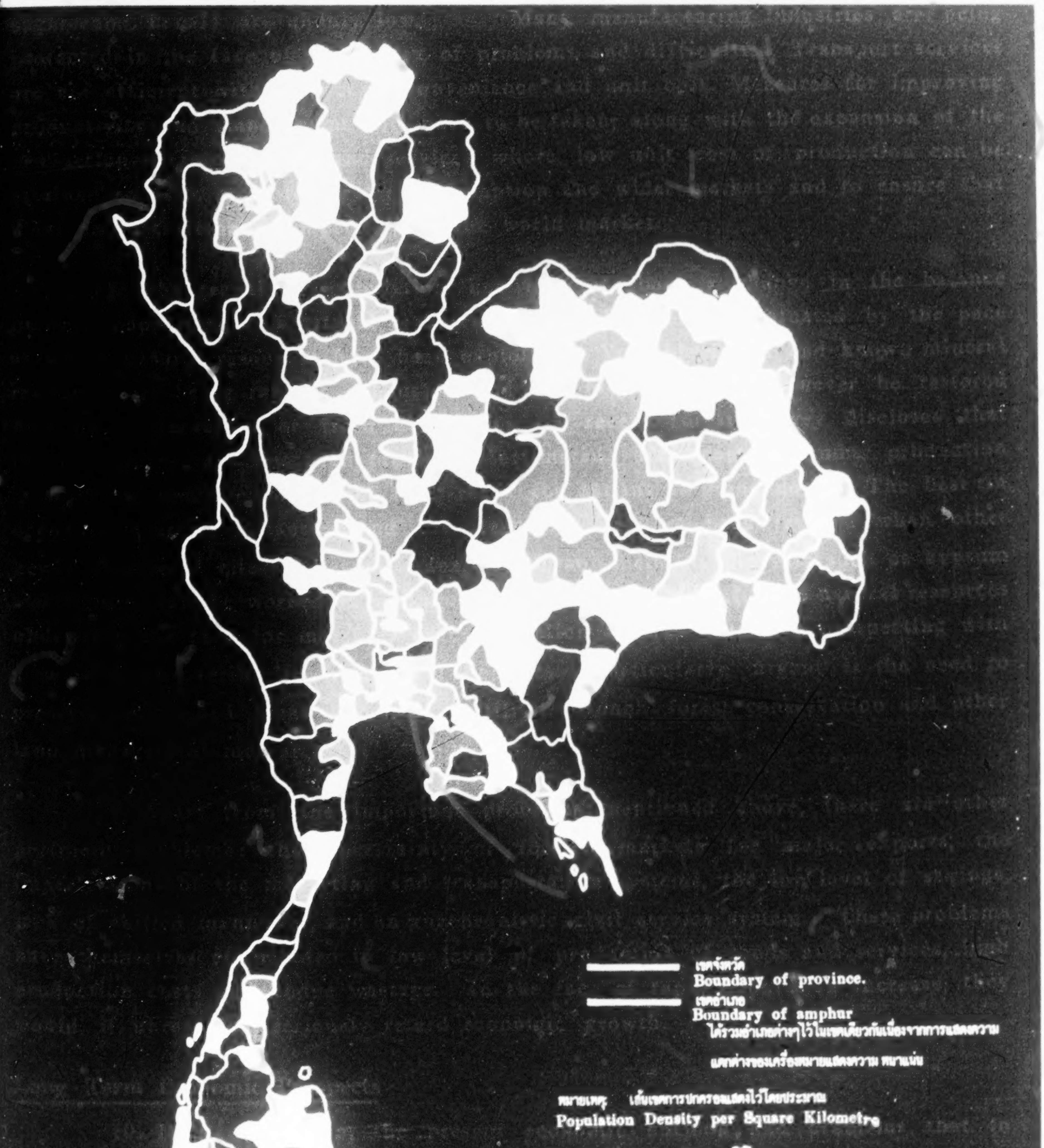
4. Although the economy is growing, some basic economic problems exist, such as the rapid rate of population growth, the danger of unemployment, low agricultural and industrial productivity, high cost of capital, and the growing need for conserving the natural resources.

5. The rate of population growth has been steadily increasing. If the current rate of over 3 percent per annum continues, the present population of 30 million will have reached a figure of about 50 million by 1982. The bulk of this population (approximately 46 percent) will be below 15 years of age. This rapid increase in population will naturally aggravate the existing basic problems, making it a more exacting task to raise the standard of living and the level of national income in the years ahead. The higher the rate of population growth, the higher the required rate of increase in the national income. The increase in the volume of investment, which is one factor determining the increase in national income, will thus have to be at a correspondingly higher rate, requiring in turn an increase in savings. To increase savings significantly is difficult in a country with a low per capital income like Thailand. If Thailand attempts to raise the level of per capital income by an annual rate of 3 percent, its savings will have to be increased from the persent rate and investment choices will have to be made in a more prudent and judicious manner than has so far been the case in order to increase the efficiency of capital use

6. Unemployment has not yet become a serious problem in Thailand where a vast majority of the population live in the rural areas. Although rural under-employment due to seasonal and other factors may exist, the present ratio of population to cultivated land is not yet too high to prevent reasonable economic returns in agriculture. A portion, or even a majority, of the population increase may continue to earn a livelihood from farm or rural employment created by the extension of cultivated land and more intensive cultivation. However, if the current rate of population growth remains unchecked, unemployment could become a more serious problem in the not too distant future, because traditional ways of providing employment opportunities will not be adequate. New employment opportunities will have to be created on the land, in industry and in tertiary occupations, involving increasingly heavy and costly investments as the easier and cheaper means of creating employment becomes exhausted. This means that the economy will have to be diversified and that the proportion of the labour force in occupations other than agriculture will have to rise.

7. Production of goods and services in Thailand is generally characterized by a low level of productivity. Yields of almost all major crops (rice, rubber,

แผนที่แสดง
ความหนาแน่นของประชากรเป็นรายอำเภอ พ.ศ. 2503
Population Density per Amphur B.E. 2503.


เขตจังหวัด
Boundary of province.
เขตอำเภอ
Boundary of amphur
ได้รวมอำเภอต่างๆไว้ในเขตเดียวกันเนื่องจากการแสดงความ
แตกต่างของเครื่องหมายแสดงความ หนาแน่น
หมายเหตุ เส้นเขตการปกครองแสดงไว้โดยประมาณ
Population Density per Square Kilometre
ประชากรต่อ 1 ตารางกิโลเมตร
ต่ำกว่า 25
Less than 25
25 - 49
50 - 99
100 - 249
250 ขึ้นไป
250 or MORE
ไมล์ 0 50 100
miles
กิโลเมตร 0 50 100 150
kilometres

sugar-cane, kenaf) are unduly low. Many manufacturing industries are being protected in the face of a complex of problems and difficulties. Transport services are not efficient with respect to convenience and unit cost. Measures for improving productivity and management will have to be taken, along with the expansion of the production of those goods and services where low unit cost of production can be attained so as to promote greater consumption and wider markets and to ensure that Thai products remain competitive in the world market.

8. The growth of population has brought about a change in the balance between population and natural resources. This has been accentuated by the pace at which natural resources have been exploited. Valuable forest and known mineral resources are being rapidly exhausted and the old balance can never be restored now by conservation or fresh discoveries. A recent forest survey discloses that forest resources are less than previously estimated. Unit cost of lumber production is going up and the volume of teak ready for cutting is going down. The best tin deposits are nearly exhausted and the stage has not yet been reached when other newly discovered mineral deposits, apart from non-metallic minerals such as gypsum and lignite, can be worked on a commercial scale. The depletion of natural resources underlines the need for measures of conservation and for extensive prospecting with a view to uncovering fresh mineral deposits. Particularly urgent is the need to preserve watershed areas and soil fertility through forest conservation and other land management measures.

9. Apart from the important problems mentioned above, there are other pertinent problems: the uncertainty of foreign markets for major exports, the imperfections of the marketing and transportation systems, the low level of savings, lack of skilled manpower, and an anachronistic civil service system. These problems have themselves contributed to low level of production of goods and services, high production costs and undue wastage. In the face of rapid population increase, they would, if unresolved, seriously retard economic growth.

Long-Term Economic Prospects

10. It is clear from the present economic outlook and problems that to maintain a rapidly growing population at a higher standard of living will require further development of economic activities and natural resources and greater diversification of the economy, involving a steady shift of the labour from agricultural to industrial and tertiary occupations. Considerable development in these fields is still possible at not excessive cost. The main lines of development of the economy are briefly sketched below.

Agriculture

11. The land is still Thailand's greatest natural resource. At present little more than 20 percent, or about 70 million rai, is under cultivation; of this only about one-seventh is covered by irrigation projects completed or under construction. There is much potential for agricultural development which could be realized by extension of the cultivated area, extension of irrigation and flood control and the introduction of fertilisers and new cropping patterns. Future emphasis, however, will be more on increasing productivity than on expanding the area under cultivation.

12. **Extension of Cultivation:** It is estimated, on the basis of land classification, that an additional 50 million rai could be brought under cultivation if there is a need for further extension. But it is envisaged that since the currently cultivated lands do not yet give satisfactory returns and there is still room for much improvement in the yield from these, only an additional 30 million rai or so would be brought under cultivation in the next 20 years if need be. There would then be about 100 million rai of cultivated land and the rural labour force would probably constitute roughly 70 percent of the total working population.

13. **Extension of Irrigation:** At present about 10.4 million rai are estimated to be under irrigation. But full utilisation of these irrigation facilities has not yet been achieved. Other major irrigation projects which are under construction or at an advanced stage of planning should be able to provide controlled irrigation to not less than an additional 10 million rai. The full utilisation of these facilities would reduce flood and drought hazards, make possible a double-cropping system and more effective use of fertilisers, thus bringing about higher overall agricultural production.

14. **Use of Fertilisers:** The use of fertilisers is still limited. At present the farmer cultivates and harvests a rice crop from his land year after year, but puts very little back into it. This is one of the reasons for the low yields. But if a regulated supply of water were assured to him and the present low prices of rice were allowed to rise (or, alternatively, if fertilisers were supplied at subsidised rates), the application of fertilisers would become a paying proposition and at a conservative estimate would increase yields by 30 precent. So far fertilisers have been applied only to a small area, but there are indications that the demand for them will rise rapidly if the conditions indicated above are realised. Broadly speaking, it is by raising yields through regulated water supply, the use of fertilisers and the adoption of improved cultivation techniques that the production of rice will be increased over the next 20 years rather than by extending the rice acreage, though this may still play some part.

15. **New Cropping Patterns:** New cropping patterns, including crop rotation and diversified planting, have begun to have an appreciable effect. Production of such field or upland crops as maize, cassava, sugar-cane and kenaf has risen sharply. Other crops which with the spread of irrigation may be much increased are beans, tobacco and cotton. Potentially, cotton can be grown on a scale sufficient to meet the whole domestic demand. In the Northeast region, where much of the higher lands are not being cultivated, a considerable acreage could, with advantage, be sown with maize and sorghums and the produce used for feeding livestock. The future of rubber production hinges upon the rate at which the programme for replanting with improved varieties can be carried out. If improved varieties can be successfully and rapidly introduced, Thailand s production and export of natural rubber could be much increased without any appreciable extension of rubber acreage. As for tea and coffee, there is room for considerable expansion of the areas under these crops to meet growing domestic demand.

16. **Animal Husbandry, Fishing and Forestry:** Animal husbandry and fishing are expected to make steady progress. As regards the latter, major emphasis will be laid on marine fishing. Both livestock and fishing have good export prospects. With respect to forestry, production is likely to decline over the next 20 years since the natural forests have been rapidly depleted of valuable timber and plantation forestry has not yet been introduced on any considerable scale. Apart from the conservation of forest cover in watershed areas, and tight control of forest exploitation, large-scale plantations of pulpwood for paper, softwood for matches and of other commercial species should be undertaken, although this will entail heavy investment and a long gestation period. At least 40 percent of the total area of the country needs to be declared conserved forest territory without delay.

Industry

17. Although industrial production has been rising fairly steadily during the past decade, it still accounts for only about 13 percent of the country's total output Most industries are of small and medium scale, many of which are family concerns employing little outside labour, and are predominantly ancillary to agriculture and forestry, such as rice milling, saw milling, flour milling and sugar refining. Lack of an internal market big enough to attract large-scale industry, lack of managerial and technical skill, high cost of capital, lack of certain essential mineral resources, lack of cheap power, poor transport facilities, and lack of orientation among the Thai labour force towards industrial discipline, are among the many handicaps which have prevented a spectacular industrial growth. However, many of these handicaps are likely to be gradually overcome. The growth of the population will in itself cause internal demand for the products of many industries to rise. Development of managerial and

technical skills will provide industries with a trained and well-disciplined labour force. Promotional incentives now being offered to investors will result in greater investment in industry.

18. Existing light industries will in the long run greatly expand and many new ones will be established. Increased agricultural output and rising income will lead to a growth of industries concerned with the processing of agricultural commodities and the preparation of foods, textiles, paper-making and fertilisers. Greater demand for housing and for construction will make possible large increases in the production of cement and other building materials. The establishment of a number of new chemical industries can be envisaged as a result of the growth of industries, using basic chemicals. Finally, there should be a great development of light engineering and electrical appliance industries.

19. Although industry will continue to grow in the fashion outlined above, its share in the national income will remain comparatively less than that of agriculture, but the labour employed in industy will certainly account for a higher proportion of the total labour force than in 1960 when it was only 3.4 percent.

20. Over the next 20 years public utilities, such as electricity and water supply, welfare housing and social services will have greatly to expand to keep pace with the increase in the population and with the growth of industries and other activities. The expansion of public utilities will itself act as a stimulus to the growth of other activities. Inexpensive power will become available when hydro-electric projects which are now under construction or in the planning stage are completed It is estimated that within the next 10 years, the total power generating capacity will increase to at least 1 million kw and that the rise in demand for power will be commensurate with the electricity supply.

21. The current demand for transport and communication services is far more than can be met by existing facilities. As other activities expand, the shortage will become increasingly acute and may turn out to be a serious bottleneck to the future economic development of the country. A crucial task for the next 10 years will be the development of rapid, inexpensive and convenient transport and communication facilities. There is an urgent need for the development of highways, feeder roads, sea-ports, railways, road and waterway transport services, and of post and telecommunications. All these projects can be fully accomplished in only distant years. It is estimated that 6,000 kms of highways and 3,000 kms of feeder roads will have been constructed and improved within the next 10 years. Even with this additional road network, inland transport facilities will still fall short of the demand which will have greatly risen by the end of the same period.

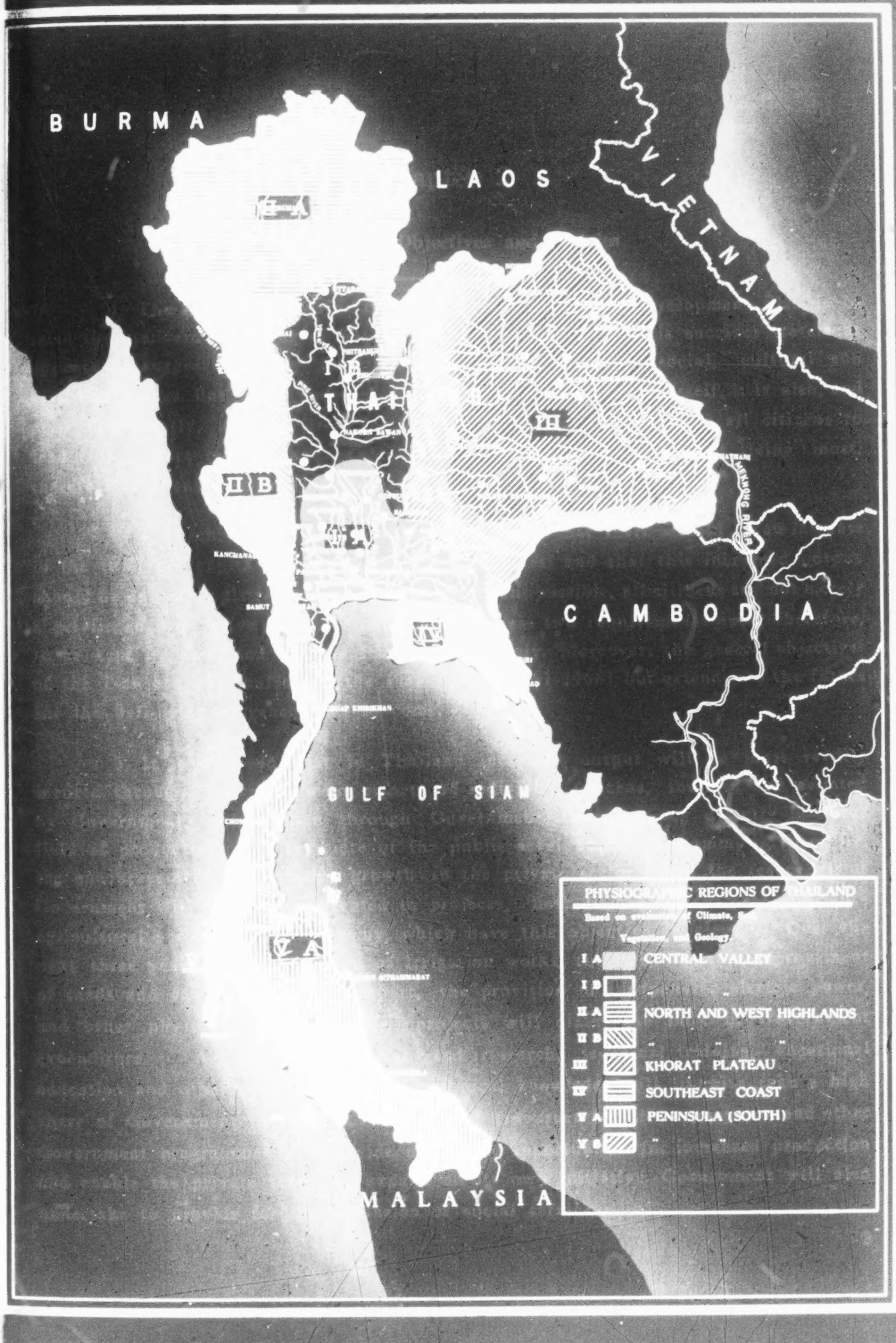
22. The expansion of activities such as outlined in the foregoing paragraphs will create more employment opportunities for the labour force. Irrigation and power projects and road construction will automatically create more jobs, apart from providing greater employment opportunities in agriculture and industry as a result of their benefits. Furthermore, the chain effect will spread to the tertiary occupations such as trading, financial and other professional services where employment opportunities will be created in a multiplied fashion But this considerable progress and expansion presupposes a greater scope and a higher level of vocational education. According to the 1960 population census, literacy is already nearly 90 percent in the 10-19 age groups and the 29 percent illiteracy rate for the total population is mainly attributable to those over 40 years of age. An even higher percentage of literacy will be achieved 20 years from now through the development of education. A majority of this literate population will have received at least a 7-year course of primary education and will provide a broad base of educated citizens necessary for further economic development. Also simultaneously there will be increasingly greater demand for trained labour equipped with adequate technical skills. Thus investment in vocational education will be of high priority in the years to come.

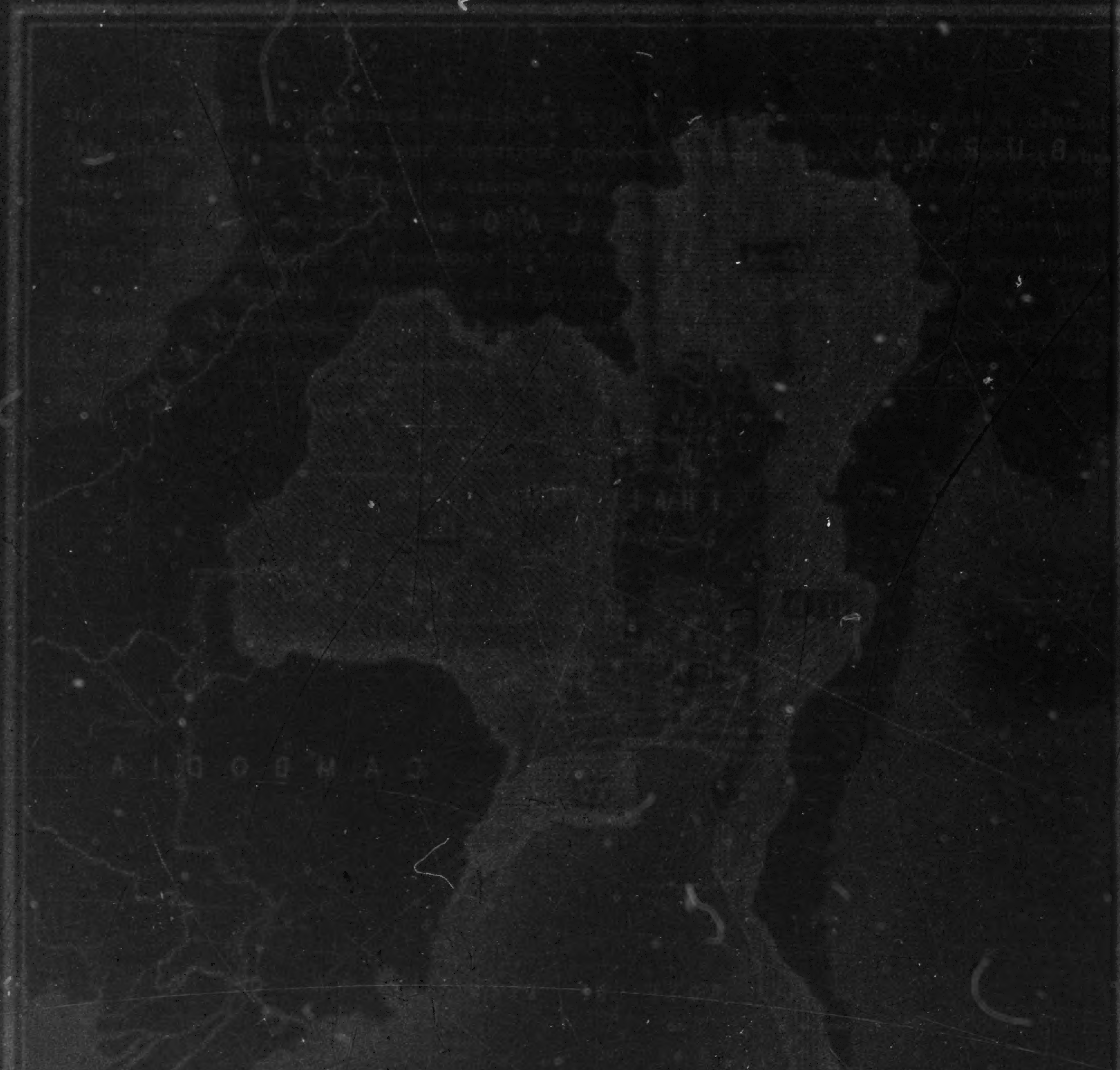
23. Thailand's public health and medical services will compare favourably with other countries in Southeast Asia. There will be more medical research institutes, large and well-equipped regional hospitals, and three institutions of higher learning in medical sciences. Serious diseases will be eradicated or brought under effective control. Every area of population concentration will have health clinics and mobile health units will provide extension services.

24. In the next 10 years trade will also expand. The value of exports should increase, with upland crops playing an increasingly greater role since there will still be great demand for these crops in the foreign markets. The value of rice, teak and tin exports is likely to increase at a modest rate the value of teak exports in particular may even decline. The value of imports is also likely to grow with machinery, petroleum products, transport equipment and chemicals gaining ever more increasing importance, but with a probable relative decline in the value of imported textiles, paper, and other manufactured consumer goods as domestic production of the latter commodities increases.

25. Assuming the anticipated rates of growth of economic activities sketched above, and assuming no seriously disruptive or retarding factors, Thailand's national income could and should be doubled within the next 15 years. To raise the national income to such a level requires greater economic development efforts, greater

and more efficient investment and higher savings. The Government will play a cruc role through its borrowing and taxation policies and by maintaining economic a financial stability to permit a smooth and continuous functioning of the econor The development projects in the public sector, which will greatly influence the cou of the development of the economy as a whole, will have to be carefully scrutiniz in terms of economic feasibility and priority. Thus in implementing the Six Y Economic Development Plan (1961-1966) consideration must be given to those polic and methods of operation which will be most conductive to the fulfilment of t Plan targets.


BURMA
LAOS
VIETNAM
THAILAND
CAMBODIA
GULF OF SIAM
MALAYSIA
MEKONG RIVER
II A
I B
II B
III
IV
V A
KANCHANABURI
SAMUT
NAKHON SAWAN
PHITSANULOK
PRACHUAP KHIRIKHAN
NAKHON SITHAMMARAT
PHYSIOGRAPHIC REGIONS OF THAILAND
Based on evaluation of Climate, Soil,
Vegetation, and Geology
I A CENTRAL VALLEY
I B " "
II A NORTH AND WEST HIGHLANDS
II B " " "
III KHORAT PLATEAU
IV SOUTHEAST COAST
V A PENINSULA (SOUTH)
V B " "



Chapter 2

Development Objectives and Policies

1. The primary objective of the National Economic Development Plan is to raise the standard of living of the people of Thailand. This succinct statement appears to suggest a purely material goal, without regard to social, cultural and aesthetic values. But while material well-being may be an end in itself, it is also, and more importantly, a means to a further end in so far as it enables all citizens to lead fuller, more creative and happier lives. "Raising the standard of living" must, therefore, be construed in this wider sense.

2. The achievement of this objective requires that there should be an increase in the total per capita output of goods and services; and that this increased output should be equitably distributed so that, to the extent possible, all citizens and not merely a privileged few derive benefit from it. Both these two requirements have, therefore, to be kept in view, and policies framed accordingly. Moreover, the general objectives of the Plan are not confined to the Plan period (1961-1966), but extend into the future for the well-being of generations to come.

3. It is believed that in Thailand increased output will be most readily secured through the spontaneous efforts of individual citizens, fostered and assisted by Government, rather than through Government itself entering directly into the field of production. The key note of the public development programme is, therefore, the encouragement of economic growth in the private sector, and the resources of Government will be mainly directed to projects, both in the agricultural and non-agricultural sectors of the economy, which have this objective in view. Over the next three years the construction of irrigation works, the building and improvement of roads and other means of transport, the provision of inexpensive electric power, and other physical "infrastructure" projects will claim the bulk of Government expenditure. Agricultural extension and research, technical training, vocational education and other projects to extend technical knowledge will likewise take a high share of Government investment. The use of resources for these purposes and other Government programmes will provide means and opportunities for increased production and enable the private sector to expand on its own initiative. Government will also undertake to provide for the expansion of social services.

4. Measures to promote increased agricultural production and of higher quality, are assigned first priority in the Development Plan, since agriculture is Thailand's most vital economic activity and over four-fifths of the labour force draws its livelihood from the land. Agricultural output has increased over the past few years at an average of better than 4 percent per year. There were, however, some special factors accounting for this favourable rate of increase, the effect of which has now begun to wear off. It is expected that over the next three years, the rate of increase will level off to a little over 3 percent per annum, but that thereafter, as a result of new irrigation facilities, improved communications, extension of agricultural services, increased private investment in farm equipment and further diversification of crops, it will rise again to at least 4 percent.

5. Industry at present still plays only a relatively small part in Thailand's economy, but an important objective of the development plan is to promote industrial expansion. This is proposed to be effected by the encouragement of private initiative, consistent with the public interest, and by the creation of a climate favourable to industrial investment both domestic and foreign. Government will promote savings and through various measures seek to stimulate an increased flow of savings into private industries. The growth of industry in the private sector will be further stimulated by a variety of aids and incentives, including an ample supply of inexpensive power, loans on favourable terms, the establishment of industrial estates, tariff protection when justified, tax relief and a minimum of restrictions and controls. Extensive surveys of national resources will be undertaken by Government to provide valuable information for future industrial development; and programmes designed to improve managerial efficiency both in public enterprises and in the private sector will be enlarged and improved. Government enterprises will be restricted to those which already exist. In course of time there will be a great industrial expansion in Thailand and industry will account for a growing share of the gross national product; over the short period of the next three years a moderate growth in industrialization can be hoped for. The main effort will be to lay a solid foundation for subsequent development.

6. The Government will promote commercial competition in the private sector within proper limits. It is expected that free competition will have beneficial results on prices. At the same time, the Government will have to control and regulate the commercial system to ensure such free competition, and to prevent the establishment of monopolies or other business combinations which exploit producers or consumers. In foreign trade, the Government will promote exports without, however, harmfully affecting the living standard of the people. Controls will be necessary on the standard and quality of Thai export products, on export monopolies, and on damaging competition for foreign markets. Thailand will want to cooperate with other countries supplying

similar primary products in the maintenance of the prices of these commodities in world markets. Another important element of commercial policy is to encourage Thai nationals to participate more actively in trade and general commerce. The State will also promote market analysis both domestic and foreign, and will assist small Thai businessmen by establishing increased credit facilities.

7. A rising level of per capita output, if it is to be sustained, will call for more efficient employment and higher productivity of the available labour force. The total population of Thailand is at present about 30 million, In ten years time it is likely to be 10 million more. In order to provide a rising standard of living for this growing population an increasing number of productive employment opportunities will have to be found for persons of working age in both rural and urban areas; and this, in turn, will demand increasing measures to promote technological advance. There is, in other words, a need to integrate the Education Plan with the National Economic Development Plan. During the next three years, therefore, while general education will be improved, emphasis will be placed on the expansion and improvement of vocational education and technical training so that as soon as possible the requirements of trained personnel of different types can be met from within the country and the basis provided for continuing technological progress. Attempts will also be made through a Manpower Planning Programme to assess the requirements of different categories and levels of technical skill and knowledge with a view to adjusting the supply of human resources to current and future employment requirements. Manpower planning will be closely coordinated with economic planning and will provide a sound basis for improvements in human resources utilisation.

8. The gross national product is expected to increase at about 6 percent per annum over the next three years. It would be a serious mistake to seek a higher rate of economic growth at the risk of impairing the country's credit and purchasing power of the baht. Maintenance of financial stability is a cardinal point of Thailand's economic policy. Outlays on development must be closely related to the financial resources available to Government so as to avoid inflationary effects. It is considered that such a policy will not only be most conducive to steady and sustained economic development, but is a fundamental requisite for the welfare of the country. A decline in the value of money generally results in lower real income for the massof the people, restricting their consumption and making it even more difficult to build savings. Maintenance of a stable currency, though not the most spectacular, is one of the most important means of ensuring that the underprivileged derive real benefits from a programme of national development and that apparent gains are not all the while insidiously cancelled.

9. There are, however, other ways also in which a wide and equitable diffusion of the benefits of economic development is sought to be secured. Public development projects have been designed to cover as many areas of the country as possible, and have also been adapted to meet the particular needs of the different regions. The varied agricultural programme, including irrigation projects and improvements in technology, the feeder road programme, community development, rural health and educational development programmes will by their very nature benefit the many millions of small farmers who constitute the majority of the population.

10. Thought has been given to the problem posed by the evergrowing concentration of population and economic activity in Bangkok which tends to widen further the gap between the levels of development in the Capital City and in the rest of the country. Government has therefore paid special attention to planning geographical distribution in such a way as to develop a number of medium size towns in order to prevent excessive concentrations in the Bangkok area and to spread the fruits of economic development more widely throughout the population. Plans for the development of each of the major regions of the country have been or are being formulated and integrated with the overall Plan. It is proposed first to start with major towns in various regions, making them development centres for these regions through establishing advanced vocational and college education facilities, encouraging the establishment of industries, improving basic facilities, and other means.

11. A wide spectrum of the population will share the benefits of expanded social services. The newly enacted social security legislation will provide a basis for improving labour welfare, special efforts will be made to increase water supply in villages, to improve rural health and village sanitation, to expand hospitals and health services in crowded areas, to provide housing for low income groups in Bangkok, and to improve the condition of the hill tribes. Private enterprise will be encouraged to join with Government in improving the social welfare of the population.

12. To ensure effective implementation of the Development Plan public administration in all fields will have to be improved. Measures are being taken to provide more effective and extensive training in various phases of administration at all levels for those in the public services. In particular, technicians and administrators involved in development project execution need to coordinate closely their efforts so as to avoid duplication and overlapping and to obtain the best results.

13. In the process of accelerating development, the Government shoulders the largest burden of the expenditure which it finances through revenues and domestic and foreign borrowings. More domestic financial resources must be mobilised and various measures are being taken to improve tax administration, including the revision

of the Revenue Code, and to increase sales of Government bonds and other securities. It may also become necessary during the coming years to change existing tax rates or to introduce new taxes which are not harmful to the economy to finance development expenditures. In the foreseeable future, however, more resources will be required for development than domestic savings could supply. In recent years considerable assistance has been received from abroad both in the form of loans and grants. Consistent with the need to ensure that the burden of external loan repayments does not become too heavy and that foreign exchange reserves are of sufficient size in case of emergency, it will continue to be Government's policy to seek both technical and capital assistance from abroad. In particular, external loans will be sought for projects requiring importations of supplies and equipment.

14. Since the Plan expenditures in the public sector will be mainly designed to encourage and facilitate increased output by the private sector, it is difficult to forecast the economic benefits and other economic results in precise arithmetical terms. The impact will depend largely on the response of millions of individuals, engaged in their own daily round of work, to the new opportunities created for them by public sector outlays. It will also depend, to some extent, on price factors which lie beyond the control of the Government of Thailand, since some of the principal products of the country, such as rice, rubber and tin, enter largely into international trade. On the assumption, however, of a favourable response by Thai citizens and reasonable stability of world prices, it is considered that the projects and programmes envisaged in the public sector will contribute to securing a rate of growth in the gross national product of about 6 percent per annum over the next three years. Since population is estimated to be rising at the rate of approximately 3 percent per annum, an increase of 3 percent per annum in per capita income would be attained, and this achievement is viewed as the overall objective of the National Economic Development Plan.

Chapter 3

Progress During the First Half of the Six Year Plan

1. Thailand's first national economic and social development plan became effective on January 1, 1961, and covered a period of six fiscal year. The first half of the Plan period was completed on September 30, 1963 and the second half will end on September 30, 1966. The Plan relates only to the development activities of the Central Government, the public enterprises and the local governments.

2. Planning for the first three years (1961-1963) did not extend beyond the determination of policies, the setting up of targets, the estimation of receipts and expenditures of the Central Government including foreign grants and loans, and the formulation of projects for economic and social development. Lack of data and information needed for more adequate planning caused it to be somewhat sketchy and at best preliminary. The formulation of projects left much to be desired and large sums had to be provisionally held in reserve subject to reallocation after subsequent review of specific projects. Notwithstanding the incompleteness of the original Development Plan, the first three years saw fairly gratifying progress; it also provided a sounder basis for the planning of the second period.

Development Spending

3. As set forth in the original Plan, expenditures on economic and social development during the six-year period were projected at 21,268 million baht with nearly a third of this total consisting of disbursements of foreign loans and grants. Of the projected total development outlay, 10,448 million baht, or slightly less than half, was earmarked for expenditure during the first three fiscal years, with 56 percent of the financing (5,828 million baht) expected to come from domestic public funds and the remainder (4,620 million baht) from foreign loans and grants. The 5,828 million baht of planned domestic financing during 1961-1963 included 5,488 million baht in Budget appropriations and 340 million bath in anticipated earnings of state enterprises.

4. The Plan originally contained no sector breakdown of the total domestic and foreign financed public development expenditures; only the Budget financed portion of the total expenditure was subdivided by sector, as presented in the table below.

Table 1

PLANNED AND ACTUAL BUDGET FINANCED PUBLIC DEVELOPMENT EXPENDITURES, F.Y. 1961–1963

(In millions of baht)

	Original planned Budget expenditure	Actual Budget appropriation	
Agriculture and cooperatives	1,434	1,424	
Industry and mining (includ. commerce and services)	451	821	(389)
Power	244	503	(312)
Transportation and communications	1,687	1,602	([illegible],543)
Education	732	560	
Health	202	229	
Community facilities and social welfare	395	637	
Thai counterpart funds	–	400	
Reserve	343	–	
Total	5,488	6,176*	(5,495)

1,417 = little over 2% of GDP (p35) but cf p27

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* Of this total, 681 million baht was actually approriated to certain state enterprises for debt repayment and payment of customs duties and business taxes. The net figures are shown in parentheses and, when combined with the remaining figures in the column, add to 5,495 million baht. Moreover, 291 million baht of General Fund development grants to local governments are included with "Community facilities and social welfare."

5. It appears that 6,176 million baht was appropriated for development purposes by the Central Government during 1961-1963 to the Ministries and other Government agencies and state enterprises. As noted in the table, however, 681 million baht was for the repayment of foreign debt incurred by state enterprise and for the payment of internal tax obligations. Hence, the net aggregate appropriation for development spending for the first half of the Six Year Plan was actually 5,495 million baht.[1]

6. The 10,448 million baht of expenditure planned during 1961-1963 under the Development Plan, which, as pointed out in paragraph 3, covers anticipated Budget appropriations, profits of state enterprises, and disbursements of foreign loan and grants, may be compared with actual financed expenditures, by major source, in millions of baht :-

	Plan financing expectation	Actual financing
Central Government appropriations (excluding General Fund development grants and Thai counterpart funds)	5,488	5,485
Profits of state enterprises	340	1,493
Foreign loans and grants	4,620	4,060
Total	10,448	11,038

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[1] This net amount and the planned Budget appropriation are almost identical in magnitude, but this should not obscure the fact that not only are several of the Budget sectoral allocations at wide variance with the planned spending, but the Budget appropriations include 400 million baht in Thai Government counterpart fund contributions and, moreover, under the category "Community facilities and social welfare," 291 million baht in General Fund (Central Appropriation) grants for development undertakings by municipal and other local governments. Neither of these two elements was incorporated in the original Development Plan and, if subtracted from the 5,495 million baht "net" figure, a total of 4,804 million baht remains. This latter Budget appropriated sum represents the actual financed expenditure of the Central Government for economic and social development purposes within the original Development Plan framework and may be compared with the estimated total disbursement which, on the basis of data available at the Comptroller-General Department and other information, is in the magnitude of 4,500 million baht.

The 11,038 million baht total includes the 681 million baht appropriated by the Central Government to state enterprises for the repayment of foreign debt and to meet internal tax obligations and, hence, overstates the actual development spending by this amount. On the other hand, this total is understated by excluding the Thai counterpart funds in the amount of 400 million baht, the Central Appropriation for local development grants amounting to 291 million baht, and self-financed development outlays of the municipalities and other local governments which are estimated at 628 million baht. In Table 2 below, these various factors are taken into account and result in a net figure of 11,677 million baht. This total may be taken as the best available aggregate approximation of financed public development spending during the first half of the Six Year Plan.

Table 2

FINANCING OF PUBLIC DEVELOPMENT EXPENDITURES DURING F.Y. 1961-1963

(In millions of baht)

Financing	Amount
Domestic sources	
National Budget (net)	5,495
Central Government Plan expenditures	4,804
Thai counterpart funds	400
Local development (General Fund) grants	291
Reinvested earnings of state enterprises	1,494
Self-financed development spending (Municipalities and other local governments)	628
Subtotal	7,617
External sources	
Foreign loans and supplier credits	2,199
Foreign grants (including U.S. counterpart fund withdrawals)	1,861
Subtotal	4,060
Total	11,677

7. It is noteworthy that during 1961-1963 domestic sources financed around 65 percent (7,617 million baht) of the total estimated public development expenditure. Foreign loans and grants paid for the remaining 35 percent (4,060 million baht). Secondly, whereas the original Plan, as previously mentioned, had anticipated that state enterprises would finance 340 million baht of development expenditure during this period from their own resources, they apparently made available 1,494 million baht, or over four times this amount. Further, the contribution by local governments out of their own resources is quite significant, accounting for an estimated 628 million baht, or 8 percent, of the domestic financing of the public development outlay for this period.

8. In the chapter that follows, the revised consolidated public development spending plans for 1964-1966 are compared with 1961-1963 not only by financing source but by sector. In the meantime, it is of interest to comment briefly on the distribution of Budget financed expenditures as presented on a sector basis for 1961-1963 in Table 1. The transportation and communications sector accounted for approximately 26 percent (1,602 million baht) of the Budget appropriations; estimated expenditures in this field were only slightly below the Plan expectation. The second largest Budget outlay (1,424 million baht) was for the development of agriculture and cooperatives, a sum representing about 23 percent of the total and approximating the magnitude called for in the original Plan. Industrial and mining development (including commerce and services) accounted for more than 13 percent (821 million baht) and power development for approximately 8 percent (503 million baht) of Budget appropriated funds. Budget support for these two sectors, particularly for the state enterprises whose requirements, as noted, included obligations for foreign debt repayment and payments of customs duties and business taxes, was 286 million larger than had been estimated, even if the 343 million baht in Budget reserve funds are included. In respect to the 637 million baht in Budget appropriations for community facilities and social welfare, the expenditure by Central Government agencies, mostly on expansion and improvement of water supply systems, was less than expected. However, public welfare assistance programmes, including self-help land settlement and hill-tribe development activities, required more funds than anticipated. Moreover, as previously explained, 291 million baht of expenditure represents Central Government Fund grants to local governments that were not included in the original Plan allocations. In the field of education, Budget appropriations for development purposes appear to be below Plan expectations. However, this divergence stems from the definition of development expenditures that was followed, which was not precise. Actually, Budget allocations for education, including projects that are clearly developmental, increased significantly during 1961-1963. Had the definitional problem been overcome, the appropriation for education development as such would be considerably higher. In the health sector, Budget appropriations slightly exceeded original targets.

9. Finally, it may be observed that the 400 million baht of Thai counterpart funds appropriated through the Budget to match foreign grant assistance and for which a breakdown by sector is not available, were utilized for developing the country's resources, particularly in the field of agriculture, transportation and communications, health and sanitation, education, public administration, and community development.

10. A more comprehensive account of developments by economic sector during the first half of the Six Year Plan is presented in later chapters of this report. However, some of the more important production gains made during this period as compared with original Plan expectations, and other indications of economic progress, are briefly sketched below.

National Output and Income

11. The expansion in public investments in conjunction with increased private investments and other favourable factors led to steady and significant growth in the nation's total production of goods and services and in the national income during 1961-1963. The average growth in output during this period is estimated at around 6 percent annually and compares with the national growth targets proposed in the original Plan of 5 percent per year. However, the Plan target is in terms of real output, that is, after adjustments for price changes, and the available data apparently indicate that in real terms the average annual growth rate during these years was comparatively lower.

12. The rate of increase in per capita real income in the years prior to the Plan was believed to approximate 2 percent per year and, with the population presumed to be growing at 2 percent each year according to estimates available prior to the 1960 population census, a 3 percent rise in per capita income per year was thought to be feasible. The census of 1960 revealed that the population was actually increasing at a rate of 3 percent per year. Thus, despite the increase in output during the past three years, it may not have been of sufficient magnitude to achieve a 3 percent annual gain in per capita income.

Agriculture

13. Agricultural development on the whole made satisfactory progress during 1961-1963 even though some governmental projects were slowed down by technical problems, difficulties in preparing foreign loan applications and other obstacles. The Bhumipol Dam will be completed in 1964 according to schedule. The construction of the Khang Kajan, Lampow, Lam Praplerng and Mae Tang irrigation projects was underway by 1963 and the Mae Klong and Nam Nan projects were in an advanced preparatory stage. The construction of distribution ditches and dykes in the area of the Greater Chao Phraya project was started in 1963 for delivery of water to an area of 700,000 rais.

14. Agricultural production, especially the major crops, by 1962 had generally surpassed the targets set in the original Plan, mainly due to favourable weather conditions, as may be seen in Table 3.

15. Rice production in 1961 was 800,000 tons higher than was originally estimated. With favourable weather prevailing, production in 1963 was estimated to be 1,400,000 tons higher than the original Plan target of 8,100,000 tons.

16. Maize production in 1962 was about 665,000 tons, or more than twice the volume of output in 1959 and was expected, in 1963, to exceed the original target by about 7 percent.

17. Cassava production in 1962 reached 2,077,000 tons and the 1963 output is estimated to total 2,200,000 tons, or nearly double the original Plan target. This enormous gain is due to expanded foreign markets which stimulated a shift from sugar cane cultivation to cassava.

18. In 1962 rubber production reached 195,000 tons and in 1963 it was expected that the production would be 3,000 tons higher since foreign demand was still fairly steady. While the rapid rise in rubber output reflects the coming into production of new trees planted during and immediately after the Korean War, the replanting of rubber acreage with high yielding trees under the Government's recently inaugurated replanting program is making only slow progress.

19. Teak prodution during recent years has shown a strong downward trend and by 1960 had declined to 154,000 cubic meters. In 1961 output decreased to 106,000 cubic meters, and despite an increase of 17,000 cubic meters in 1962 production in 1963 is not expected to exceed 100,000 tons. These figures indicate a slower rate of decline than had been expected. The production of yangwood and other timber has progressed satisfactorily

Table 3

AGRICULTURAL PRODUCTION AND TARGETS, 1959-1963

Item	Unit	Production					Plan target 1963
		1959	1960	1961	1962	1963	
Paddy	(000 M.T.)	6,770	7,834	8,247	9,254	9,500	8,100
Maize	(000 M.T.)	317	544	598	665	675	634
Cassava	(000 M.T.)	1,083	1,222	1,726	2,077	2,200	1,250
Rubber	(000 M.T.)	174	171	186	195	198	185
Teak	(000 cubic metres)	163	154	106	123	100	130
Other woods	(000 cubic metres)	1,050	1,112	1,177	1,220	1,286	1,270
Marine & fresh water fish	(000 M.T.)	206	209	306	312	335	310

Preliminary

Industry and Mining

20. The industrial and mining production targets originally set forth in the Plan have, in general, been surpassed due to promotion schemes and growing domestic demand. The performance for key industrial products is presented in Table 4.

21. Cement production in 1962 surpassed 965,000 tons, which is twice the level of 1959 production and 243,000 tons higher than the planned target.

22. A new statistical survey for the cotton textile industry was carried out to obtain more current data on the operations of Government textile factories and private mills. It was found that production in 1962 had increased by 25 percent over 1961 to 109 million square yards and was supplying about half of the total domestic requirements. Based on estimated production of 70 million square yards in 1959, the Plan target was set at 140 million square yards for 1963.

23. With new plants coming into operation, production of gunny bags reached almost 11 million units in 1962, which is about double the output in 1959. The Plan objective for 1963 was 7½ million bags.

24. Production of sugar reached a level of 151,000 tons in 1962, a gain of about 88 percent over 1959. The period 1959-1962 was one of plant expansion in this industry and of over-production relative to domestic market demand. A decrease in production to around 130,000 tons was expected in 1963 which would still be about 60 percent above the original Plan target.

25. Paper production rose to 5,860 tons in 1962 and was more than twice the 1959 output. Production in 1963 was expected to increase further but it was anticipated that output would be well below the target of 6,400 tons because the Bang Pa-in Paper Mill has not been able to operate at full capacity.

26. In 1962, 10.5 million cigarettes were produced, or 25 percent more than in 1959. Production was expected to increase still more in 1963 and will come close to the planned target of 12 million.

Table 4

INDUSTRIAL AND MINING OUTPUT AND TARGETS, 1959-1963

Item	Unit	Production				Plan target 1963
		1959	1960	1961	1962	
Gunny bags	(000 units)	5,060	6,869	8,835	10,992	7,500
Sugar	(000 M.T.)	80	102	120	151	87
Paper	(000 M.T.)	2,600	2,741	3,627	5,860	6,400
Cigarettes	(000 units)	8,439	8,875	9,783	10,500	12,000
Cement	(000 M.T.)	482	440	810	965	723
Cotton textiles	(million sq. yds.)	n.a.	n.a.	87	109	140
Tin-in-concentrates	(M.T.)	9,840	12,275	13,468	14,800	14,000
Gypsum	(M.T.)	8,000	13,000	12,000	21,000	15,000
Lignite	(000 M.T.)	141	108	163	195	420

n.a. Not available.

Minerals

27. In general, the production of minerals in 1962 was significantly above 1959-1960 levels, with output of tin-in-concentrates approaching 15,000 tons, lignite production 195,000 tons, and gypsum 21,000 tons. The output of lignite was almost 40 percent higher than in 1959, but was not expected to reach the planned target of 420,000 tons in 1963, since the use of lignite as fuel is not as extensive as was originally assumed. Gypsum and tin production, on the other hand, were expected to be above the planned levels in 1963.

Electricity

28. The growth of electrical energy has been satisfactory and with installed capacity at 334,000 kw in 1963 the Plan target of 370,000 kw was almost achieved.

Communications and Transport

29. Newly constructed and reconstructed national highway of about 500 km were built during this period but, in general, highway construction and improvement fell behind schedule between 1961-1963. This was due to delays caused by lack of supplies, equipment and personnel, and to slow progress in the acquisition of land. The construction of all US-aided highway projects was delayed con-

siderably. In 1962 a new 8-year highway programme was launched to replace the original programme. The construction and improvement of feeder roads also failed to make satisfactory progress because of the heavy concentration on maintenance and repairs of the existing roads and because a definite programme had not been worked out. A comprehensive study and survey is being undertaken as a preparatory step toward the improvement and construction of new and better feeder roads for the country.

30. The railway improvement programme between 1961-1963 was financed by a loan from the World Bank. The construction of a new line between Suphanburi-Nong Pladuk has been completed and the Kaeng Khoi - Buayai line, financed by a loan from West Germany, is now under construction.

31. The programme for improvement of post and telegraph offices in Bangkok and Thonburi as well as in the provinces did not proceed as scheduled. The telecommunications programme has also been slightly slowed down largely due to difficulties in the feasibility survey and delays in loan negotiations. Nevertheless, installation of telecommunications in the 1st, 2nd, and 3rd zones (Central, Eastern, and Northeastern Regions), begun in 1962, was expected to be completed in 1964.

Health

32. In the field of public health the expansion and improvement of health services is moving ahead of targets. The completion of new hospitals and modernization of existing ones will provide more facilities and additional beds for the increasing number of patients. Health programmes, especially the control of epidemics, such as small pox and cholera, and the eradication of yaws are proceeding satisfactorily. Malaria eradication and the control of T.B. are being carried out according to the Plan. Local health and village sanitation, for which assistance is being given by the U.S. Government, are being expanded in almost every province. The construction of health centres is, however, progressing slower than envisaged due to the lack of doctors and nurses.

Education

33. Although the Development Plan set forth no specific targets in the field of education, the Budget allocations for financing parts of the National Education Plan (560 million baht) were utilized especially for education improvement and research programmes. In general, the education programme made satisfactory progress, especially in higher education.

Chapter 4

Revision of the National Economic Development Plan, 1964 - 1966

1. At the time when the Six Year Plan was announced the Government also stated that it would undertake the revision of the Plan for the second period (1964-1966) in order to make it more complete and up-to-date. For this purpose, more adequate data and information would be secured for individual projects through the following-up and analysis of the performance of the Plan in the first period, taking also into consideration the changes in economic and social conditions since the announcement of the Plan.

2. The salient features of the Plan for 1964 - 1966 as revised and improved are described below:-

a. The formulation of projects, determination of developmental policies and the estimation of public sector resources and expenditures are very much improved as a result of the availability of more adequate, comprehensive, and reliable data which since 1961 the office of the National Economic Development Board, with the cooperation of various governmental agencies concerned, has helped to assemble to meet the planning needs.

b. The original Six Year Plan covered only the resources and expenditures of the Central Government whereas the revised Plan for 1964-1966 incorporates also the development resources and expenditures of public enterprises and local governments. Moreover, this consolidated account is also presented for 1961-1963. Thus the Plan as revised not only pertains to the overall public sector in the real sense but permits a ready comparison of the first period with the projected second half.

c. Development targets and policies are presented in a clearer and more comprehensive manner thus providing a strong basis upon which consistent developmental measures and projects can be undertaken.

d. In revising the Plan the Office of the National Economic Development Board has made a projection of Thailand's economic potentials and changes in the country's economic structure into the time period 15-20 years hence so that the Plan can be kept in a proper long-term perspective.

e. In the revised plan for F.Y. 1964-1966 the sources of funds for developmental uses are presented in more detail, including not only a detailed breakdown of budgetary funds but also of foreign loans and grants, and of funds from other sources such as profits of public enterprises and local government revenues. The estimates are a result of a long and thorough series of discussions with the various agencies concerned.

f. Since the Thai Government subscribes to the doctrine of growth with stability, the country's financial position during the next three years has been thoroughly appraised. In the light of this appraisal it is envisaged that Government's developmental effort on the scale now proposed can be undertaken without fear of engendering inflationary pressures which would have serious repercussions on the country's economic growth and international position.

g. International trade and payments play a vital role in the economic development of under-developed countries. Thus sound planning requires that total foreign exchange earnings and requirements be estimated as a part of the target setting process to prevent foreign exchange shortages which may prove a serious bottleneck to the accomplishment of the planned objectives. For this purpose the NEDB, in collaboration with the Bank of Thailand, has made estimates of foreign exchange earnings and requirements as well as projections of the balance of payments for 1964, 1965 and 1966. The appraisal of the foreign exchange earning capacity and of the balance of payments situation will materially contribute to the sound formulation of monetary and fiscal policies and can, besides, provide a better basis for approaching foreign countries for loan or grant assistance.

3. Since the announcement of the original Six Year Plan, projects initiated, formulated, and proposed by all agencies concerned with the country's economic and social development have increased both in number and in quality. There is a greater awareness that these projects must be viewed in the context of a dynamic economy in the process of rapid growth. There is increased understanding of the importance of plan implementation at every level in its broader aspects, such as the mobilization of resources, the improvement of the administrative process, supervision and coordination, etc.

4. Despite the many improvements that have already been made, the development plan for 1964-1966 still contains a number of imperfections. The NEDB will definitely take upon itself the task of further refining the Plan. In particular, attempt will be made to establish a more effective system of progress reporting and performance evaluation. Serious attention will need to be given to the burden or liability of the development undertakings completed during the Six Year Plan period. The annual recurring costs of operating and maintaining development schemes will constitute a heavy and growing drain on the Budget and on other resources of the country. Also, much work will need to be done in the harmonizing of manpower planning with economic planning, the widening of the coverage of planning to include economic activities in the private sector, and the establishment of the functional relationships among projects, policies, measures and anticipated targets both for individual sectors and for the

economy as a whole, the targets for the latter being expressed in terms of the increase in national production and income, living standards, and other significant indicators of economic and social progress.

Consolidated Public Sector Plan 1964-1966

5. The revised Plan establishes a public development spending target during 1964-1966 of 20,300 million baht, an increase of about 74 percent over the 11,677 million baht of estimated expenditure during 1961-1963. Comparing these figures with the original estimate for the first half of the Plan, as stated in the previous chapter, of 10,448 million baht and the estimate for the second half of 10,820 million baht, we find the revised Plan represents not only a marked expansion in development spending during 1964-1966 but a significant extension of public planning effort and responsibility. This expenditure will be incurred on more than 200 development projects of high priority which have been approved for inclusion in the national economic and social development plan. Details of these projects are found in the respective sector programmes in this report. The estimated revised expenditures on the development projects during 1964-1966 are presented in the table below by principal economic sector and by major financing source.

Table 1

REVISED PUBLIC DEVELOPMENT PLAN EXPENDITURES, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Sector	Domestic resources			External resources			Total
	Central Gov't	Other	Total	Foreign loans	Foreign grants	Total	
Agriculture and cooperatives	2,022	80	2,102	729	144	873	2,975
Industry and mining	455	444	900	230	67	296	1,196
Power	566	244	800	810	25	987	1,798
Transport and communications	3,902	712	4,614	2,014	377	2,391	7,005
Education	1,169	-	1,169	433	204	637	1,806
Health	647	-	647	145	183	328	975
Community facilities and social welfare	1,688	1,341	3,029	475	241	717	3,745
Unallocated	450	-	450	-	350	350	800
Total	10,899	2,822	13,722	4,988	1,591	6,578	20,300

Numbers are rounded and do not necessarily add to totals.

6. The estimated development spending in the public sector during 1964-1966 of 20.3 billion baht constitutes 9 percent of the gross national product of Thailand estimated for this period. The corresponding proportion in 1961-1963 appears to be 3 percent smaller. Further, it is estimated, on a rough basis, that 1964-1966 public development domestic and foreign spending will account for about a third of the total current and capital spending of the Central Government, public enterprises and local governments. The corresponding proportion in 1961-1963 is estimated at around 28 percent. This acceleration in development spending indicates clearly the Government's firm determination to bring higher living standards to the Thai people by stepping up the rate of national economic growth through increased public investments.

7. The preponderant emphasis is on infrastructure projects, as seen in Table 2 below. Estimated expenditures on transportation, communications and power development projects alone amount to 8,803 million baht, approximately two-fifths more than in 1961-1963. They account for over 43 percent of the total, a somewhat smaller proportion than in 1961-1963 when spending reached an estimated 5,508 million baht (excluding Budget grants to state enterprises for foreign debt repayment and payment of customs duties and business taxes). This heavy concentration on infrastructure development, a fundamental policy of the Government of Thailand, is considered basic to the long-term healthy growth of Thailand's expanding economy. The physical environment in which private enterprise, in particular, can most rapidly grow is immeasurably improved by Government large scale-investments in this area.

Table 2

TOTAL PUBLIC DEVELOPMENT SPENDING IN F.Y. 1961-1963
COMPARED WITH PROJECTED SPENDING IN F.Y. 1964-1966

(In millions of baht)

Sector	F.Y. 1961 - 1963 Estimated		F.Y. 1964 - 1966 Projected	
	Amount	%	Amount	%
Agriculture and cooperatives	1,647	14.1	2,975	14.7
Industry and mining (including commerce and services)	965	8.3	1,196	5.9
Power	2,341	20.0	1,798	8.8
Transportation and communications	3,167	27.1	7,005	34.5
Education	685	5.9	1,806	8.9
Health	390	3.3	975	4.8
Community facilities and social welfare	1,723	14.8	3,745	18.4
Unallocated	761	6.5	800	3.9
Total	11,677	100.0	20,300	100.0

Numbers are rounded and do not necessarily add to totals.

10% of GNP
(p35)

8. The estimated expenditure on developing the transportation and communications system shows the greatest absolute increase of all the sectors, more than doubling from 3,167 million baht to 7,005 million baht. Highway expenditures are to be sharply increased under the Eight Year Highway programme (1963-1970) which, when fully implemented, will give Thailand an inter-regional network of standardized and all-weather roads. Feeder roads linking production units with markets will also be built and extended in a number of changwads. Other undertakings given priority during 1964-1966 are the construction and improvement of railways, the interregional telecommunications project, and preliminary work in connection with the building of a second civil airport.

9. The Government's concern with promoting individual enterprise, well-being and growth is reflected further in the relatively large share of expenditure allocated for improving the educational system, public health, social welfare, and community facilities such as water supplies, sewage disposal, etc. Expenditure for this combined group of activities is estimated at 6,526 million baht, or almost a third of the total projected public development outlay. In 1961-1963 the corresponding expenditure was roughly two-fifths as large and, moreover, represented less than 25 percent of the total.

10. Expenditure on agricultural and cooperative development is expected almost to double from 1.6 billion baht to around 3 billion baht. Although this increase is not reflected in a significant improvement in agriculture's relative share, which is less than 15 percent of the total, the enlarged allocation is nevertheless evidence of the Government's strong determination to develop the agricultural sector to the utmost. Many agricultural undertakings are designed to promote increased output which will result not only in increased exports and foreign exchange earnings but will also provide essential raw materials for the country's expanding and new industries. Moreover, the relatively greater emphasis being given to the development of the transport and communication systems will benefit agriculture as a whole by providing improved and new outlets for agricultural produce, reducing costs of production, and stimulating over-all agricultural production. The increased agricultural incomes will permit growth in industry, trade and other activities.

11. Estimated outlays on industrial and mineral development of 1,196 million baht constitute about 6 percent of the total public development spending in 1964-1966. This sector's share of the total during the first half of the Plan period was slightly higher although estimated spending was less in magnitude. The Government of Thailand, as already mentioned, is strengthening the private enterprise sector by environmental and other improvements. The relative decline in direct public spending on industrial development

reflects, in the main, a decision to allocate a smaller proportion of Budget resources to state enterprises; it by no means should be taken to imply a decline in Government interest in promoting private industrial development.

12. The Central Government agencies will have a much larger role, absolutely and relatively, in total development spending during the second half of the Plan than during the first half. Their development expenditure, including both Budget funds and foreign loans and grants, will about double in magnitude and will account for two-thirds of the total public development spending, compared with less than three-fifths of the total during 1961-1963. In contrast, the state enterprises, which accounted for a third of the total in the previous period, are expected to account for less than a fourth in the second half. Their estimated expenditure on development projects is expected to increase about 22 percent to around 4.8 billion baht, compared with 13.7 billion baht for Central Government agencies. It is anticipated that the state enterprises will succeed in employing in development projects about the same volume of profits as during 1961-1963 but will be less dependent on the National Budget for funds. This expectation of a relative decline of the public enterprises in the overall development spending pattern and outlook reflects Government's policy to reduce the drain on the Budget by state corporations and otherwise to restrict their operations to carefully prescribed fields in the public interest.

Table 3

DEVELOPMENT SPENDING OF CENTRAL GOVERNMENT AGENCIES, PUBLIC ENTERPRISES AND LOCAL GOVERNMENTS, INCLUDING FOREIGN LOANS AND GRANTS, F.Y. 1961-F.Y. 1966

(In millions of baht)

Fiscal Year	Total	Central Government Agencies	Public enterprises	Local governments
1961	2,837	1,610	1,036	191
1962	3,902	2,290	1,286	325
1963	4,939	2,959	1,578	402
	11,677	6,860	3,899	918

(continued on next page)

Fiscal year	Total	Central Government Agencies	Public enterprises	Local government
Projected				
1964	6,311	3,621	2,201	490
1965	7,001	4,709	1,679	631
1966	6,986	5,392	878	716
Total	20,300	13,722	4,758	1,819

Numbers are rounded and do not necessarily add to totals.

13. These projected changing relationships may be ascertained from Table 3. Further it appears also from this table that estimated development spending by municipalities and local governments is of increasing importance. It is estimated that they will spend 1,819 million baht in 1964-1966 as compared with 918 million baht in 1961-1963. This near doubling of development expenditure would increase their share from 8 percent to 9 percent of the total public development outlay.

14. Savings, tax revenues and other domestic receipts including borrowings are expected to finance approximately 68 percent of the total revised development plan requirement, compared with around 65 percent in 1961-1963, and foreign loans and grants the remainder. The domestic sources, as shown in Table 4, include in the total of 13,722 million baht the sum of 3,712 million baht in deficit financing expected to be necessary to close the financial gap between estimated available resources and expenditures during 1964-1966. Deficit financing was not required in 1961-1963 when domestic sources provided 7,617 million baht for the financing of public development. In 1961-1963, after providing for normal expenditures including defense, debt service and, through the "development Budget," 681 million baht of foreign debt repayments and internal taxes of state enterprises, the Central Government itself was able to make available 5,495 million baht in real domestic resources for financing development, the balance coming from the public enterprises and local governments. The estimates for 1964-1966 assume that, excluding deficit finance, 7,188 million baht in real domestic resources of the Central Government (i.e., 10,900 million baht minus deficit financing of 3,712 million baht) will be available for development spending, or about 30 percent greater than in 1961-1963. More real resources would be available for development were it not for an anticipated increase of around 44 percent in normal administrative and defense expenditures plus debt repayments and service charges, that is, from an estimated 17.5 billion baht in 1961-1963 to approximately 25.3 billion baht in 1964-1966.

Table 4

FINANCING OF PUBLIC DEVELOPMENT EXPENDITURES

(In millions of baht)

Source	F.Y. 1961-1963 Estimated	F.Y. 1964-1966 Projected
Domestic		
Revenues	6,214	7,460
Government bonds and Treasury bills (non-expansionary)	2,496	2,550
Non-budget transactions	611	-
Deficit finance (Surplus -)	- 1,705	3,712
Subtotal	7,617	13,722
Whereof :		
Central Government	5,495	10,900
Public enterprises	1,495	1,481
Local governments	628	1,341
Foreign		
Loans	2,199	4,988
Grants	1,861	1,591
Subtotal	4,060	6,578
Total	11,677	20,300

Numbers are rounded and do not necessarily add to totals.

15. The 7,460 million baht of domestic revenues shown in the table for 1964-1966 includes 4,637 million baht representing the estimated Central Government revenue surplus, that is, the difference between Central Government taxes and other revenues on the one hand and ordinary expenditures, administrative expenses, debt repayment and service charges on the other. In 1961-1963 the revenue surplus for development spending amounted to 4,766 million baht. To achieve the 1964-1966 goal of 4,637 million baht in surplus revenues for development in the face of rising normal government expenditures necessitates the imposition of ceilings on such expenditures and the mobilization of additional taxes and other revenues. Total Budget

revenues of nearly 30 billion baht, or 7.6 billion baht more than in 1961-1963, are anticipated in 1964-1966, including almost 1 billion baht in revenue resulting from changes in the tax system and improved tax collection and administration.

16. Included with the Central Government's estimated domestic resources for development spending in 1964-1966 are 2,550 million baht in bonds and Treasury bills, excluding purchases from the Bank of Thailand. Improvements now underway in the efficiency of the Government Savings Bank and savings promotion schemes are expected to increase this bank's ability to purchase Government securities. The record increase of fixed deposits in commercial banks induced by higher interest rates authorized by the Commercial Banking Act (1962) is expected to lead also to increased purchases by these banks of Government bonds and Treasury bills. Moreover, the 8 % interest now offered on Government bonds and their income tax exemption feature are attracting, and may be expected to continue to attract, more purchases by both individual and institutional investors. It may be that the combination of these measures will result in higher sales of Government securities than has been estimated.

17. The deficit financing of 3,712 million baht during 1964-1966 is to be covered partly by borrowings from the Bank of Thailand and is not likely to create serious inflationary pressure on the economy. The magnitude of such borrowings is being restricted to not more than 1,000 million baht annually and is regarded as a reasonable safe limit and has been set as a ceiling. Thailand has been experiencing an expansion in the money supply made necessary by the rapid increase in economic activity. While the money supply will continue to expand along with economic growth, the Government will not resort to excessive borrowings from the Bank of Thailand that would result in price increases threatening the country's economic stability and living standards and its international position.

18. Supplementing the domestic funds of the Central Government, as noted, are the resources of the public enterprises and local governments after providing for normal and other non-development spending. These resources constitute an important element of the total resources for development. They are estimated at 2,822 million baht in 1964-1966, or a fifth of the total domestic development resources, and compare with 2,122 million baht in 1961-1963, the gain of one-third coming from the growing revenues of the local governments.

19. Finally, the estimates of domestic resources likely to be available for development cannot take account of unforeseeable emergencies which may occur. The

predictions of Government revenues appear feasible and could be exceeded; on the other hand, they rest on assumptions of favourable crops, continued business expansion, relatively stable prices, etc. Further, they assume that non-development spending can be constrained within necessary limits and that the Government will vigorously pursue measures to accomplish this.

20. The foreign financing envisaged for 1964-1966 of 6,578 million baht is composed of existing and prospective loans and supplier credits of 4,988 million baht and of existing and prospective foreign grants amounting to 1,591 million baht. The estimated external loan financing is more than double the 1961-1963 level, whereas the estimated foreign grants, reflecting the tapering off of United States grant assistance, is about 15 percent below the estimated 1961-1963 level. Of the 4,988 million baht in foreign loan disbursements, approximately three-fifths are for utilization by Central Government agencies and the remainder by the public enterprises. The proportions were markedly different in 1961-1963 when almost three-fourths of the foreign loan financing went for public enterprise development activities. While the estimated foreign financing is roughly 60 percent larger in amount than in the first half, the Government's policy of becoming increasingly self-reliant in financing public development programmes is evident from the fact that the anticipated foreign loans and grant expenditures of 6,578 million baht represent a smaller percentage of the total estimated resources than in 1961-1963.

21. Since Thailand is a free-economy in which economic choices are made by free individuals and since agriculture upon which the economy is built is predominantly dependent on climatic conditions and world markets which are characterized by uncertainties and continuous changes, the forecast of the accomplishments of the Plan can be no more than a rough estimation. Nevertheless, assuming a fairly smooth implementation of the development projects, normal climatic conditions and no large deviations from the assumptions adopted in regard to world markets, the following forecasts can be made of the results that effective implementation of the Plan will help accomplish by the end of 1966 in different fields.

The National Income and Capital Formation

22. During 1960-1963 Thailand's total production, expressed in constant (1962) prices, increased by an estimated 28 percent. This averages out to around 7 percent per annum, but the increase from year to year has been uneven. The achievement of this growth in real output during the past four years is attributed mainly to a dramatic

expansion in exports and to booming manufacturing and construction activity. Although by 1963 exports had levelled off, heavy public development investments during 1961-1963 and continuing on an even large scale during 1964-1966, together with improved production techniques, provide the basis for assuming that the gross domestic production of Thailand can be expected to grow at an average annual rate of around 6 percent during the second half of the Plan period. The gross domestic output would rise to 77.0 billion baht in 1966 and would be a fifth larger than is estimated in 1963. With the population growing at 3 percent a year, per capita income in real terms, expressed in 1962 prices, would increase by approximately 3 percent a year.

23. Total gross private and public fixed investment (including allowances for depreciation and repairs of old equipment) reached 32.8 billion baht and accounted for about 18 percent of the gross domestic product during 1961-1963, according to present estimates, which may, however, be too high. The corresponding investment is expected to rise during 1964-1966 to 40.6 billion baht, or by almost 25 percent, because of anticipated increased capital spending on the part of both the private and governmental sectors, and would constitute approximately 19 percent of the total production of the country. These relatively high ratios of fixed capital formation, if actually attained, would be expected to lead in future years to even more dynamic growth than in the past.

24. All development expenditures, it should be observed, are not included in the estimates of capital formation since many development activities, for example, research, agricultural extension work, and social welfare projects, do not lead to the formation of physical assets.

Changes in the Economic Structure

25. Thailand's economy, as may be expected, is undergoing structural changes. Agriculture's share in the gross domestic product has been declining and during the first half of the Six Year Development Plan period, as appears from the table below, has decreased still more, falling from an estimated 37 percent in 1961 to around 36 percent in 1963. On the other hand, industry, especially manufacturing, and power, communications and transportation are gaining greater importance. As a percentage of gross domestic output, industrial production, including all manufacturing, mining, and construction, has increased from 19 percent in 1961 to 20 percent in 1963. The transportation and communication sector accounted for 8 percent of the estimated value of the total output in 1961 and almost 9 percent in 1963. Wholesale and retail

trades and other services, which contribute 35 percent of the estimated value of Thailand's total production, have as a group shown no significant change in relative importance during the past three years.

Table 5

ESTIMATED GROSS DOMESTIC PRODUCTION OF THAILAND, IN 1962 PRICES

Sector	billion baht			Percent of total		
	1961	1963	1966	1961	1963	1966
Agriculture	21.74	23.30	25.58	36.9	35.9	33.2
Industry	11.47	13.01	16.42	19.4	20.0	21.3
Manufacturing	7.11	8.31	11.06	12.0	12.8	14.4
Construction	3.47	3.67	4.21	5.9	5.7	5.5
Mining and quarrying	0.89	1.03	1.15	1.5	1.6	1.5
Electricity and water supply	0.23	0.31	0.49	0.4	0.5	0.6
Transport and communications	4.91	5.75	7.65	8.3	8.9	9.9
Trade and services	20.65	22.54	26.88	35.0	35.0	34.9
Total	58.99	64.91	77.01	100.0	100.0	100.0

The estimates are on a January-December calendar year basis.
Numbers are rounded and do not necessarily add to totals.

26. These structural trends are expected to continue during the second half of the Plan period with agriculture's share in the value of total gross domestic production dropping to an estimated 33 percent in 1966, industry, power, communication, and transport continuing to play increasing roles, and trade and services tending to maintain its relative position. It should be noted that while agriculture's relative importance will continue to decline, agricultural output is expected to rise in value from 23.3 billion baht in 1963 to 25.6 billion baht in 1966. To say that the relative share of agriculture is expected to decline is another way of stating that industry and other sectors will be increasing at more rapid rates. The share of manufacturing, for example, will have risen from 12.0 percent in 1961 to 14.4 percent in 1966. What the comparisons reveal is a significant and well-know economic phenomenon characterizing healthy economic growth. While expansion of the total production is assuredly an

important goal of economic development, expansion unaccompanied by diversification may not be wholesome to the stability of an economy which depends excessively on one or a few products. Thus the fact that industry is playing an increasing role in the economy of Thailand is not only a measure of the success of the industrial development programme but is also indicative of a sounder and more stable economic base which is another important objective of the economic development Plan.

27. Apart from making efforts to accelerate the development of the country in order to raise the overall national income and maintain healthy economic stability, the Government has also been anxious to bring the fruits of the economic growth to the Thai people in all regions of the country. With this purpose in view the Government has set up a number of committees for each region, whose responsibility it is to draw up development plans for the respective region. Thus there are the Committee on the Development of the Northeast, and others on the North, the South, the East and the West. With respect to the Northeast, the Government aims at raising the living standard of the population of this region, which constitutes as much as one-third of the total population of the Kingdom, to the same level enjoyed by the rest of the country. For this purpose a Northeast Development Plan was drawn up and its main features are integrated in the National Economic Development Plan. Development plans for other regions are being worked out and will later be integrated in the national plan.

Balance of Payments

28. The years 1964-1966 will witness a slower expansion in Thailand's exports and a continued sharp growth in imports with the latter increasing, according to present expectations, to 47.9 billion baht during the period, or by 10.6 billion baht compared with 1961-1963. However, higher foreign exchange earnings on goods and services and larger receipts from foreign loans, grants, and private investments are expected during 1964-1966 to result in only a slight decline, about 60 million baht, in official foreign exchange reserves, which will not adversely affect the financial and economic stability of the country. Thailand was fortunate in having no balance of payments difficulties during the first three years of the Six Year Plan period; on the contrary, a combination of favourable factors added 4,559 million baht to the foreign exchange reserves. The original Plan contained no balance of payment projections so that a comparison with actual results is not possible. Tables 6 and 7 below and the accompanying text summarize the balance of payments situation during 1961-1963 and provide the estimates and main assumptions underlying the projections for 1964-66.

29. During the first half of the Plan period the value of exported goods and services totaled 34,284 million baht, showing an average rate of increase of approximately

8 percent per annum, while the value of goods and services imported into the country (including imported goods and services financed by foreign loans and grants) amounted to 37,334 million baht, showing an almost similar average rate of increase. Of the total value of import payments, 24,048 million baht consisted of non-capital goods (i.e., of consumption goods, gasoline and related products, and raw materials) and expenditures for debt repayment, interest and other debt charges, and other services. During the 1961-1963 period export earnings less non-capital import expenditures left a surplus of 10,236 million baht available for importing capital goods and services. The value of imported capital goods and services during this period was actually 13,286 million baht and was financed with 7,609 million baht in foreign grants and loans and private investment, and with 5,677 million baht in other resources owned by Thailand. This left a balance of payments surplus of 4,559 million baht which was added to the foreign exchange reserves.

Table 6

BALANCE OF PAYMENTS OF THAILAND, F.Y. 1960-F.Y. 1963

(In millions of baht)

Item	1960 a/	1961 b/	1962 c/	1963 c/	Total 1961-63
1. Foreign exchange earnings on goods and services	9,340	10,970	11,661	11,653	34,284
2. Receipts of foreign grants, loans and private investment	2,111	1,920	2,600	3,089	7,609
Total receipts	11,451	12,890	14,261	14,742	41,894
1. Payments on imports of non-capital goods and services	6,891	7,674	7,932	8,442	24,048
2. Payments on imports of capital goods and services	3,884	3,704	4,613	4,968	13,286
Total payments	10,775	11,378	12,545	13,410	37,334
Change in foreign exchange reserves	676	1,511	1,716	1,332	4,559

a/ : Jan.-Dec. b/ Oct.-Dec. 1960, Jan.-Sept. 1961 c/ Oct.-Sept.

30. The favourable balance of payments situation during the first half of the Plan period can be said to have been the direct result of the change in the export structure during the past four to five years. Traditionally, major exports of Thailand centered around a few products such as rice, rubber, tin and teak. Recently the exports have been diversified; such products which formerly were of negligible importance, like maize, kenaf and cassava, become leading exchange earners in the course of the first three years of the Plan period. This strongly indicates that the developmental efforts toward the diversification of the economy have begun to bear fruit. Another factor contributing to the favourable balance of payments situation was the gain in the terms of trade during this period. Finally, the sizable increase in foreign loans and grants and private foreign investments during the 1961-1963 period also contributed to the country's strong financial position.

31. The balance of payments projections in the table below reveal that during the second half of the Plan period earnings from the export of goods and services have been estimated at 37.6 billion baht, which on an annual basis averages approximately. 12.5 billion baht. This compares with around 34.3 billion baht or an annual average of 11.4 billion baht during the first half of the Plan period. The projection of the general trend of exports during the years 1964-1966 assumes that all export commodities (except teak) will increase in quantity but that price trends will vary. Rice export prices are expected to decline from the recent high levels. Natural rubber prices also are expected to fall due to keener competition from synthetic rubber. The price of tin is not likely to decrease below the 1963 level, teak prices may be expected to advance slightly, while the price of other commodities are assumed to remain at approximately their 1963 averages, The rate of increase of the value of exports (1963 100) is estimated at about 4 percent per annum, which is half the rate of increase experienced during 1961-1963.

Table 7

BALANCE OF PAYMENTS PROJECTIONS FOR F.Y. 1964-F.Y. 1966*

(In billions of baht)

Item	1964	1965	1966	Total
1. Foreign exchange earnings on goods and services	11.93	12.49	13.18	37.60
2. Receipts of foreign grants, loans and private investment	3.57	3.54	3.21	10.23
Total receipts	15.50	15.94	16.40	47.83
1. Payments on imports of non-capital goods and services	9.16	9.85	10.66	29.67
2. Payments on imports of capital goods and services	5.99	6.20	6.03	18.23
Total payments	15.15	16.05	16.69	47.89
Change in foreign exchange reserves	.35	-.12	-.29	-.06

* Oct.-Sept. fiscal years.

Numbers are rounded and do not necessarily add to totals.

32. The value of imported goods and services financed by both trade channels and by foreign loans and grants during 1964-1966 is estimated to total about 47.9 billion baht, with an estimated average annual rate of increase of around 8 percent, which is roughly comparable to the average rate of expansion in 1961-1963. The value of imported capital goods and services alone during the second half of the Plan period is estimated at 18.2 billion baht, which is equivalent to an increase of approximately 4.9 billion baht over the first half. Foreign loans and grants and private investment are expected to finance 10.2 billion baht worth of imported goods and services, while 5,998 million baht will be paid out of export earnings by way of ordinary trading channels, and 63 million baht by drawing down the foreign exchange reserves.

Chapter 5

Implementation of the National Economic Development Plan

1. The National Economic Development Plan is neither a fixed and unalterable document nor a law to be followed to the letter. Rather, it constitutes a general guide and directive to the Departments and Agencies of Government in the carrying out of their responsibilities in the development field. For the private sector, the Plan serves to inform the public of the Government's policies and targets. The planning work is co-ordinated and the Plan text written in the NEDB, the central planning agency, but the actual work of translating the Plan intentions into action is widely spread among Government Departments and Agencies, including the state enterprises and, to a varying degree, the many local governments.

Coordination and Project Evaluation

2. Coordination among the Departments and Agencies was not as effective as hoped for during the first two years of the Plan. Accordingly, the Ministry of National Development was established in 1963, largely in order to improve coordination among those Departments responsible for major infrastructure and other basic development projects. A number of these Departments were brought into the Ministry of National Development. Furthermore, to improve the implemention of the Plan at the project level, a Project Inspection Team was established under the Office of the Prime Minister. This Team will cooperate on the closest terms with the NEDB and the Budget Bureau in project execution evaluation. In carrying out its responsibility the Team will:-

(i) Follow the progress made against the development targets established by the NEDB;

(ii) Design progress reporting forms so that the Departments and Agencies will have standardized methods for reporting on the development projects under their responsibility;

(iii) Design forms for the evaluation of project execution, so that the NEDB, the Ministry of National Development and other interested Ministries, the Budget Bureau, and the inspectors of the Prime Minister's Office will be correctly informed on the defects, difficulties and the financial situation relative to each project.

3. It must be emphasized that full and timely progress reporting is an imperative requirement to provide a flow of information concerning the physical progress of the work, the financial status, and the results achieved. It enables prompt identification of difficulties, obstacles or bottlenecks encountered so that they may be removed. Thus it not only facilitates implementation of the Plan but improves the groundwork for drafting of a subsequent Plan. Further, the inspection of development projects has been far from satisfactory and it is expected that during the second half of the Plan a marked improvement will be seen.

4. At the policy level, apart from the NEDB which by its very nature is the central agency, the Fiscal Policy Office of the Ministry of Finance, the Department of Technical and Economic Cooperation of the Ministry of National Development, and the planning units or offices of the various Ministries all play important roles. It is desirable that each of the Ministries responsible for economic and social development projects should have its own planning office, comparable to the Technical and Planning Office of the Ministry of National Development, to screen and evaluate its own projects before submitting them for review and approval to the NEDB. The planning office should report directly to the highest authority in its organization to suggest and review steps which are being taken by its Ministry or Agency to implement its part of the Plan and the annual development budget. Each planning office should maintain the closest contact with its counterpart in other Ministries and with the NEDB.

5. In addition to Ministerial and Departmental cooperation on policy matters, cooperation among Departments and Agencies in development administration is of crucial importance. It is obvious that improved cooperation with other Departments and Agencies can lead only to better execution of the Plan. Friendly competition among Departments should be encouraged, but should not exceed reasonable bounds so as to lead to duplication of work. The division of responsibility at the provincial level as between "administrative" matters and "technical" matters and between Central Government Departments and provincial government agencies also leads to difficulties. These problems can be solved only by a greater willingness to cooperate in order to speed up development.

6. There are other Government Departments and Agencies which are not directly concerned with development projects, but which are no less important than those directly concerned in the development process. The financial work of the Ministry of Finance, the marketing and commercial work of the Ministry of Economic Affairs, the local administration work of the Ministry of the Interior, for example, have far reaching results on the development of the country; and should they fail to carry out their activities in an effective manner, the development projects will be in jeopardy. The

National Statistical Office, too, has a highly significant role in supplying statistical information for planning and other purposes and, it goes without saying, the Civil Service Commission is of the utmost importance in the improvement of development administration.

7. In summary, it can be said that the economic development of the country is a joint and cooperative effort of all, not merely particular Departments and Agencies. The main theme must be, without the closest cooperation in development administration the Plan can have no meaning. In the setting of annual targets, the Budget Bureau and Ministry of Finance have especially vital parts to play. Without the closest cooperation between these two Agencies and the NEDB it is not possible to achieve a realistic and practicable programme for financing the Plan and its component projects.

Financing the Plan

8. The administrative instrument which brings the Plan to life is the annual Central Government Budget, which finally establishes the domestic financial resources likely to be available in each year, and the uses to be made of those resources for general administration and services and for development. The efforts of the Ministry of Finance to improve tax and other revenue resources, and of all Ministries and the Budget Bureau to restrain the growth of general administrative expenditures, directly contribute to the Plan's implementation by securing necessary resources for developmental investment. Nevertheless, despite these efforts it may transpire that the development resources available in any one year are less than foreseen in the Plan due to unexpected circumstances. In that event, Plan expenditures in that year would have to be reduced accordingly. On the other hand, it may well be that in some years resources exceed those expected in the Plan, thereby permitting additional development expenditures consistent with the overall plan and economic stability. In either event, the annually budgeted development expenditures would differ somewhat from those of the Plan. In other words, the revised Plan will itself be modified annually in the light of changing circumstances and developing events. These annual revisions, which in reality are part of the budgetary process, must be undertaken no less carefully than was the revision. No change should be made without careful consideration by the Budget Bureau, in close consultation with the NEDB, of the effects of the change on other parts of the Plan and on the general progress of development.

9. The development activities of state enterprises and local governments are only partly financed from the National Budget; to an important extent, the enterprises finance themselves by the re-investment of earnings and the local governments out of their own revenues. The investment proposals of the former, because they are enterprises of the State, come under Government scrutiny. Each state enterprise is required to

submit its investment budget to NEDB for approval, and in this way their investments are linked with the Plan. The development undertakings of the local governments are reviewed by the Ministry of Interior and coordinated with its programme for developing community facilities, social welfare, local administration, etc. Other sources of funds for the Plan are foreign grants and loans. The Plan as written will fail of full implementation if the domestic resources and external grants and loans of approximately the volume visualized fails to materialize. In respect to the latter, the outcome is not entirely within Thailand's control, but will depend to an important extent on the capacity of aid-giving countries and international agencies to provide financial and technical assistance to developing countries. The level of foreign assistance expected for the Plan is believed to be realistic, being based on a number of individual projects and programmes which appear to be most suitable for such assistance. Indeed, commitments covering many of them have already been made, and the corresponding disbursements thus assured. Government will seek the necessary additional commitments through bilateral, multilateral and other international arrangements. In the foreign assistance field, the Department of Technical and Economic Cooperation has a major responsibility and close cooperation with the NEDB and the Ministry of Finance is a categorical necessity.

10. The development of a country means the development of its natural resources, financial resources and manpower resources. The Thai Government is putting much effort into the development of natural resources through the numerous projects included in the Plan. As for financial resources, the Government has raised the revenue sights to provide development funds up to the maximum believed feasible, and has also sought foreign financed assistance. The important thing is not the absolute amount but rather the best utilization of the available financial resources. Projects which have low priority are relatively costly, pay off slowly, and have to be deferred.

Administrative Performance

11. However important and useful the Plan may be, effective administration of the Plan depends ultimately on the various Departments and Agencies, whose capability and efficiency vary widely. Some have had reasonably good performance while others have lagged behind due to the lack of good leadership, the shortage of efficient and capable personnel, or other reasons. It is desirable that necessary improvements be made and that obstacles to efficient administration be removed. Financial resources cannot be translated into successful projects and programmes without the concentrated and devoted efforts of properly trained manpower of high integrity. Even so, there will be a waste of time, energy and money unless proper supervision and co-ordination of work is found at all levels. The mere existence of the Plan does not by itself

ensure the co-ordination within and co-operation between the executive and operating Departments of Government which is necessary for its implementation; that is the responsibility of the individual Departments, and of Government as a whole.

12. The Plan assigns an important rôle to the state enterprises, and they too carry a heavy responsibility for its successful implementation. Just as with the Departments of Central Government, any deficiencies of technical, administrative or managerial performance in the state enterprises will hamper the execution of the Plan. As with the Government Departments, however, this is not a problem created by the Development Plan, but is one of general Government administration, to be resolved by Government as a whole.

Manpower Planning

13. The successful execution of social and economic development projects depends greatly upon the availability of efficient and capable personnel. The proper training and utilization of manpower is therefore vital to the whole development effort in every aspect. The shortage of trained manpower constitutes a more serious impediment than the shortage of finance or natural resources. This is particularly true of those countries which are accelerating their rate of growth in order to increase rapidly the standard of living of their population.

14. In the development of human resources, apart from improvements in the supply and quality of technical and administrative Government personnel through in-service training programmes at home and abroad and other projects, it is necessary to consider the manpower problem of the country as a whole.

15. The Government of Thailand realizes the importance of manpower development and has been devoting considerable attention to manpower planning in general and as a guide for more detailed planning of general and technical education and training. One important task recently accomplished is the joint Thai-USOM preliminary study and estimate of the demand-supply manpower outlook in Thailand for 1966-1970. This pioneer study shows that there will clearly be shortages in 1970 of secondary education graduates in the general and vocational streams and of middle-level and top-level technicians. Further detailed studies will be made to improve the assessment of manpower needs.

16. Because of the importance of overall manpower planning and its close relation with national economic development planning, the National Economic Development Board is the central organ for national manpower planning, with responsibility for comprehensive manpower planning in both the private and public sectors. At the same

time, other Government Departments and Agencies, which are directly concerned with manpower problems as they relate to their individual jurisdictions or spheres of interest, should also have manpower units, as in the Ministry of National Development, the Ministry of Education, and the National Statistical Office.

Statistics and Implementation

17. In still another field, prompt and accurate statistical and other information to illuminate the structure and functioning of the national economy is essential, not only for general administrative purposes, but also to provide the basis for informed development planning and for recording and evaluating the progress of the national development effort. The National Statistical Office has recently been placed directly under the Prime Minister in recognition of its national importance, and its programme of statistical work is being widened and improved to encompass both current and longer term needs. To mention a few examples, a preliminary survey of industry in Bangkok-Thonburi has been undertaken as a prelude to a full-scale industrial census, and an Agricultural Census is currently being tabulated. Both of these will yield information never before available. A sample survey of family income and expenditure in Bangkok-Thonburi was recently completed, and is being followed by similar surveys elsewhere in the country. These will permit, among other things, the preparation of more accurate cost-of-living price indices. All these are elements contributing towards improved planning and implementation of developmental investment and activities.

PART II - THE SECTOR PROGRAMMES

Chapter 6

The Development of Agriculture

1. Thailand is essentially an agricultural country. About four-fifths of the country's total working population is engaged in agricultural employment. Agriculture contributes over one-third of the national income, and most of the exports are agricultural products. The importance of agriculture in the Thai economy cannot be overstated. To plan for the development of agriculture is therefore of crucial significance since it implies planning for the advancement of a greater part of the country and of the population.

2. One of the most cardinal aims in the economic policy of the Government is to allow market forces to operate as freely as possible within the structure of the Thai economy; economic planning is therefore concentrated in the public sector. To be consistent with that aim, planning for agricultural development is limited to the undertakings of Government agencies, the primary objective being to create favourable conditions in the private sector, so that opportunities are provided for the benefit of the individual without obstructing private initiative and enterprise. Through strategic investments in irrigation; crop promotion, agricultural extension and research, the Government aims at promoting private efforts in agricultural production, with higher returns to the cultivator and to the economy through increased output per acre, diversified and better quality crops, and favourable prices. Moreover, apart from the promotion of agricultural production and marketing, the Government aims at promoting the welfare of the country's agricultural population, both by direct and indirect measures.

3. The development of agriculture in Thailand can be divided into the following four categories:-

(i) The development of natural resources, such as land forests, water resources, and wild life. Government activities in this category include irrigation forestry, fisheries, and land development.

(ii) Research and experimentation in new agricultural techniques in order to bring about reforms in production methods, increase productivity, improve the quality of yields, stimulate the production of new and improved crops and more extensive breeding of animals. Accomplishments in this field require a great deal of time and steps taken in this direction are essentially part of a long-term project. Research and experimentation are imperative if Thailand is to succeed in producing enough for her rapidly increasing population, and to be able to compete with other nations in the world market for primary products. The agriculture development plan, therefore, provides relatively substantial funds in this category.

(iii) Agricultural promotion and the diffusion of information are two principal means by which Government can render effective service to the country's agricultural population, either directly through officials trained in agriculture, or indirectly via demonstration of the results of research and experimentation, so that the demonstrated methods will be more widely practised and benefit the farmers.

(iv) The promotion of the farmer's income and welfare through producer cooperatives and other farmer organizations, low interest agricultural credit, and land ownership. It is a declared policy of the Government that each farmer should be able to own a piece of land that can yield a livelihood. Furthermore, other Government development programmes and services, such as the development of highways and feeder roads and of industries based on agricultural products, and expanded social services and local amenities will bring greater benefits to the farmer.

4. Land is the most valuable natural resource of Thailand. Optimum development of agricultural land is of fundamental importance since the increase in agricultural production is a principal source of development funds. Further, products of agriculture serve as raw materials for the growing domestic industrial and manufacturing sector. Externally, the surplus over internal consumption of agricultural products will continue to be the country's most important foreign exchange earner. At present less than one-fourth of the land is under cultivation. Therefore, the expansion of cultivable land outside of conserved forest areas, and the creation of a higher productive capacity per rai are the two principal themes in the development of Thailand's agriculture.

5. Apart from required improvements in production, improved marketing of the agricultural products is basic. The marketing problem, fortunately, should not be serious for most products in the foreseeable future. The main agricultural products, such as rice, maize, tapioca and beans, are not likely to encounter any persistent lack of demand in world markets. Other products of increasing importance, such as oil-seeds,

cotton, fruits and vegetables, are expected to have little difficulty in finding domestic and foreign markets. Kenaf is perhaps an exception. Rubber is different, however; the increase in rubber production elsewhere and the ever-increasing substitution of synthetic rubber for natural rubber makes it imperative, if Thai rubber is to remain competitive in the world market, for the production cost per unit to come down considerably. Generally speaking, competition in the world market for primary products is expected to be more keen in the future. To solve the marketing problem requires not only well-considered internal and external marketing policies, but also effective international cooperation.

Policy Objectives and Implementation

6. The policy objectives of the agricultural development plan for 1964 - 1966 are set forth below :-

(i) To expand agricultural production and exports, to improve the quality of important farm products, and to diversify output in order to achieve increasing national income and a higher per capita income for the country's agricultural population.

(ii) To improve production techniques so that output per rai and income from production will be increased.

(iii) To manage and develop natural resources valuable to agriculture, such as soil, forest, water, etc., and, on a planned basis, to bring them efficiently into the production system so that they can contribute most effectively to the economic well-being of the country. In the development of natural agricultural resources, it is necessary to conserve certain areas in the interest of long-term production capabilities.

(iv) To bring improvements in social conditions in rural areas, so that Thai farmers may enjoy a higher standard of living including essential welfare services. The Government also aims at fostering a strong sense of national unity and cooperative spirit among farmers.

(v) To promote farm institutions such as cooperatives, young farmer's associations, agricultural credit, etc., and to promote a sound system of land tenure.

(vi) To promote the status of agricultural employment, economically and socially, and to stimulate commercial activities in agricultural products.

(vii) To ensure that the farmer receives equitable remuneration for his labour, and that he will not be at a disadvantage in marketing his products, in the leasing of land and in obtaining loans from private lenders.

(viii) To expand and to improve the efficiency of Government agencies and public enterprises which serve the agricultural population, so that they will be more effective in the fulfilment of their tasks.

7. In order to implement these eight principal policy objectives, the following measures will be taken:-

(i) The building of the agricultural infrastructure, such as irrigation, power, and communications, will be accelerated. Major irrigation projects are the large storage dams in the north, i.e., the Bhumiphol Dam in the Tak province and the Ta Pla Dam in Uttaradit province a diversionary barrage across the Mae Klong in Karnchanaburi province and in the Northeast numerous small dams, reservoirs and water-tanks. Apart from irrigation water, some of these projects will also produce hydro-electric power and have other subsidiary benefits. Moreover, the extensive road construction programme, both national highways and feeder roads in the provinces, will contribute significantly towards agricultural development.

(ii) Agricultural research will be improved and expanded so as to modernize farm techniques and to increase farm efficiency. Agricultural centres will be established in each of the regions, beginning with the Northeast and the Central Plain. Each centre will serve as a multi-purpose agriculture station. Where centres already exist, improvements will be made in their operational efficiency; new centres will be established only where a real need for them exists. Apart from agriculture centres, various agricultural research institutes will be established, such as the Rice Disease Institute, the Animal Health Institute, the Soil Fertility Institute, the Fresh and Sea-Water Biological Institute, and others. Research and experimentation will be directed towards better crops and animal breeds, control and eradication of crop and animal diseases, better soil utilization and fertilizer use, and the proper utilization of water in farming.

(iii) The diffusion of agricultural information and promotion of agricultural activities will be improved and expanded. There will be an agricultural extension office in each of the regions, acting as the coordinating agency for the services and activities rendered to the region by the various departments of the Ministry of Agriculture. In order to achieve this will require more agricultural officers and more farm equipment. In diffusing information and promoting agricultural activities, local needs and conditions will be taken into consideration, including a careful assessment of the market demand for the locality's products. In the areas under the command of irrigation, cropping during the summer will be encouraged. The effort to encourage rice farmers to grow better varieties of rice will not be relaxed; on the contrary, even more attention will be given to this programme.

(iv) In animal husbandry, steps will be taken to improve the breeds of beef cattle, dairy cattle, buffaloes, swine and poultry. Production will be increased to meet market demand; and emphasis will be placed both on the improvement of the quality and the size of animals and on the reduction of production costs in order that animal husbandry may be a remunerative occupation. Continued efforts will be made to control and eradicate animal diseases, and to promote better feeding of animals so as to improve the profit-cost ratio and measures will be taken to provide public grazing fields under effective Government supervision.

(v) In the development of fisheries, steps will be taken to promote fresh-water and marine fishing. Distribution of fingerlings of different varieties will be more extensive. It is also desired to promote fish-farming in ponds and in rice fields, particularly in areas under perennial irrigation; brackish-water and sea-water fishing will also be promoted through the use of modern fishing equipment and techniques. Surveys and research on living aquatic resources will be carried on and their conservation will be actively pursued so that they will not be depleted through over-exploitation.

(vi) In the field of forestry, steps will be taken to conserve forest watershed areas as well as designated preserved forests. Offenders against forest-laws and regulations will be pursued and punished, necessitating more forest-control and protection units. Forest plantations, where suitable, will be established, along with additional national parks and national forest areas. Research will be conducted on forest products and their economic utilization. In watershed areas where surrounding forests have been destroyed, reafforestation will be undertaken.

(vii) Priority is given to promoting crops already in good demand, such as maize, oil-seeds, coconuts and cotton. The replanting of rubber trees will be accelerated and, during the replanting period, rubber-planters will be assisted in finding other sources of income, with special assistance to be given to small planters. Research and experimentation on high-quality rubber trees and on other crops capable of being grown where rubber trees stand will be conducted at the rubber stations.

(viii) Improvements in the land-tenure system are designed to assure average holdings and ownership per farm family of not less than the present size of about 25 rai. Shifting cultivation will be prohibited. Land distribution and conservation will be carried out through farmer cooperatives, and, by means of these cooperatives, farmers will be trained in better farm management so as to increase their income. The land survey and classification programme will be speeded up; in addition, soil fertility surveys and soil mapping will be carried out. In the future, it will be desirable to expand areas under cultivation according to the results of the land classification survey now under way, to encourage farmers to use fertilizers, and to teach them the basic principles of soil and water conservation.

(ix) Marketing facilities and services will be provided to assist farmers in the disposal of their products. For this particular task, it will be necessary to achieve better cooperation among the relevant governmental departments and agencies, and to improve the marketing system and transportation of products from farms to markets. Steps will be taken to maintain or establish quality standards for agricultural products, to diffuse price information to all farmers. Where appropriate and needed, prices of farm products will be stabilized, with necessary assistance given to the farmers. Government assistance in marketing will not supplant but augment private efforts. Government will control and issue regulations as required to facilitate the marketing efforts of the private sector.

(x) Self-reliance and self-help will be promoted among farmers by encouraging the establishment of farmer cooperatives and other associations. The underlying principle is that unions among the farmers should be based on self-help and the overall interests of the farmers themselves. These farmer groups and cooperatives will be the most important medium of communication and cooperation between the farmers and the Government, and they will enable Government to serve the farm population more effectively and efficiently. In addition, animal husbandry groups and fishermen groups will be encouraged, based on similar self-initiative principles, that is to establish their own groups, to have only farmers or fishermen as members, and to run their own organizations.

(xi) In building a suitable agricultural credit system, it is important, among other things, not to exceed a feasible rate of credit expansion. The most appropriate channel for extension of credit is the farmer cooperative or association. Suitable credit control and supervision is of course essential if the credit is truly to assist production. Loan repayment must also be satisfactory with both principal and interest paid on schedule. In the primary phase of operation, owing to the limited funds available, it will be necessary to limit credit extension to a few selected places. At the same time, the Government will encourage farmers to build up their savings in order to have sufficient funds to finance their agricultural needs and to remain credit-worthy. A proper agricultural credit system should be set up through reorganizing existing agencies.

(xii) Other Government services to the farm population will be improved and expanded, such as education, rural development, public health, development of industries using farm products as raw materials, training in farm leadership, young farmer's activities, etc.

(xiii) It is desirable that the ratio of farmers to the total working population be reduced. As other economic fields, such as manufacturing, construction, public utilities and the services sector develop in scope, they will provide alternative or additional employment opportunities.

(xiv) Owing to the fact that the financial resources at the command of the Government are limited in comparison to the development needs in agriculture and other sectors, the Government must seek assistance abroad. But the external assistance available and the country's capacity to borrow are limited. to the extent that resources are insufficient, priority should be given to the Northeast of Thailand.

(xv) At present there is a great shortage of the required technical manpower, such as extension officers and other trained personnel and the number has to be increased. It will be necessary to obtain larger Budget appropriations to reach the technical manpower strength required.

(xvi) Since agriculture is the principal economic activity, it is necessary to increase the services rendered to the farm population at the same time, it is necessary to ascertain the equitable financial burden which the farm population should be expected to bear in return for the services received from the State.

Agricultural Production Targets and Assumptions

7. The increases in production that are anticipated under the Plan will result partly from the expansion of the cultivated area, and partly from increases in farm productivity. Irrigation will be of immense value in controlling floods and in enabling, with proper encouragement, a second crop to be planted in the rice fields during summer. In Table 1 below are set forth the agricultural production and export goals to be achieved by the end of the Plan in 1966. In setting these targets consideration was taken of internal and external market conditions and outlook. Accordingly, for some crops, such as kenaf and tapioca, the goals are set well below actual production capacity, owing to expected lower market demand.

Table 1

AGRICULTURAL PRODUCTION AND EXPORT TARGETS IN 1966

Item	Production	Volume of export
Crops (tons)		
1. Rice	9,500,000	1,500,000
2. Rubber	210,000	200,000
3. Maize	750,000	710,000
4. Kenaf and jute	200,000	150,000
5. Tapioca	2,200,000	660,000 (flour & cassava waste)
6. Soya beans	28,100	5,000
7. Mung beans	66,300	30,000
8. Ground nuts	167,000	15,000
9. Cotton	70,000	7,000 (tons in seeds)

Table 1 (continued)

Item	Production	Volume of export
10. Castor beans	45,650	40,000 (tons in seeds)
11. Sesame	22 500	4,500 (tons in seeds)
12. Tobacco leaves	55,000	2,500
13. Sugar-cane	4,000,000	50,000 (sugar)
14. Coconut	1,600,000	6,000 (copra)
15. Kapok	270,000	18,000
Fisheries (tons)		
1. Fresh-water fish	80,000	-
2. Marine fish	300,000	20,000
Livestock (head)		
1. Buffaloes	5,670,000	150,000
2. Cattle	3,990,000	1,200
3. Swine	4,180,000	100,000
4. Ducks	7,000,000	-
5. Chickens	50,000,000	1,000,000
Forest Products (cu.m.)		
1. Teak	100,000	60,000
2. Yang wood	300,000	60,000
3. Others	1,000,000	20,000
4. Firewood	1,350,000	-
5. Charcoal	800,000	45,000

8. The planned increases in agricultural output by 1966 compared with 1961 are presented for major crops and other products of agriculture in Table 2 :-

Table 2

PLANNED INCREASES IN AGRICULTURAL OUTPUT, 1961-1966

Item	Production		Index (1961=100)
	1961 Actual	1966 Target	
Crops (tons)			
1. Rice	8,247,000	9,500,000	115
2. Rubber	186,100	210,000	113
3. Maize	598,000	750,000	125
4. Kenaf and jute	350,900	200,000	75
5. Tapioca	2,012,500	2,200,000	109
6. Soya beans	24,200	35,000	145
7. Mung beans	41,000	66,300	162
8. Ground nuts	107,900	167,000	155
9. Cotton	38,300	70,000	183
10. Castor beans	32,800	45,650	139
11. Sesame	12,400	22,500	181
12. Tobacco leaves	48,400	55,000	114
13. Sugar-cane	3,984,000	4,000,000	100
14. Coconut	1,042,000	1,600,000	154
15. Kapok	231,000	270,000	117
Fisheries			
1. Fresh-water fish	72,000	80,000	111
2. Marine fish	233,000	300,000	129
Livestock (head)			
1. Buffaloes	5,400,000	5,670,000	105
2. Cattle	3,800,000	3,990,000	105
3. Swine	3,800,000	4,180,000	110
4. Ducks	6,600,000	7,000,000	106
5. Chickens	44,000,000	50,000,000	114
Forest Products (cu.m.)			
1. Teak	105,665	100,000	95
2. Yang	319,482	300,000	94
3. Other timbers	857,781	1,000,000	117
4. Firewood	1,317,325	1,350,000	102
5. Charcoal	762,330	800,000	105

9. The assumptions underlying the agricultural targets for 1966 and the supporting data are presented in the following sections :-

Rice. It is considered reasonable to assume that production of rice (paddy) will not be below 9.5 million tons in 1966. The production figures reported by the Rice Department indicate an average annul increase of 1.5% during the last ten years. On the other hand, the last five years have witnessed an average annual rate of increase of about 2.4%, and in view of the extension of irrigation and flood control in progress and the promotional efforts that are being directed towards improvement of yields, it seems plausible to assume that at least this higher rate of increase will continue. On this basis, and projecting from the year 1960, which can be considered to have been a normal year, production of paddy in 1966 should be no less than 9.5 million tons. This figure, in fact, has already been exceeded in 1963 when production was slightly more than 9.5 million tons according to preliminary estimates. Weather conditions in 1963 were admittedly favourable, but this high output suggests that production should be no less than 9.5 million tons, provided climatic factors are normal. Allowing for increasing domestic consumption and other uses, the quantity avilable for export in 1966 would be expected to approximate 1.5 million tons (in terms of milled rice).

Rubber. In 1966, 3.5 million rai of land are expected to be under rubber. Total production is estimated at 210,000 tons, or 60 kilogrammes per rai. Internal consumption is not expected to exceed 10,000 tons, thus leaving 200,000 tons available for export. Future internal consumption should follow a rising trend, owing to increasing demand on the part of Thailand's rubber-consuming industries.

Maize. The production of maize in recent years has shown one of the fastest rates of growth of all farm crops. However, in future years the rate of increase is expected steadily to slow down. The foreign market for maize is not unlimited and, moreover, increasing competition from other producing countries is anticipated. Another factor is the declining soil fertility in the maize-growing areas. Hence production is expected to rise to 750,000 tons or higher by 1966, of which 40,000 tons will be consumed internally. As foreign markets become more difficult to find in later years, more reliance will be placed on developing the internal market, e.g., for feeding animals, making flour and extracting oil.

Kenaf and Jute. If the quality, of kenaf in particular, is improved, and if conditions in the world market are favourable, production can conceivably reach 200,000 tons in 1966, of which 50,000 tons will be used for domestic consumption.

The figure for internal consumption is tentative, depending on the volume of dumestic production of gunny-bags.

Tapioca. Provided the United States and the European markets are still favourable in 1966 and additional markets can be found, production would be expected to reach 2.2 million tons, which can be transformed into 660,000 tons of tapioca products (meal and flour). These figures rest on the further assumption that tapioca farmers will make increased use of fertilizers.

Various Beans. The production of various kinds of beans has great potential. However, owing to unfavourable foreign markets and low prices, production is not expected to increase to any signficant extent in the near future. The existence of a large-scale vegetable oil factory in the country should help increase production.

Castor Beans. The fluctuation in foreign demand for castor beans is considerable. However, world demand is likely to increase somewhat and should stimulate a slight increase in production above the average annual volume during 1959-1962 in the neighbourhood of 40,000 tons.

Cotton. There is great domestic demand for cotton and production higher than indicated by the 70,000-ton target would be possible but for poor quality of the local product. The species grown in Thailand are relatively inferior and much subject to pests. Accelerated extension work will lead to greater production resulting in lower raw cotton imports until Thailand, in the near future, becomes self-sufficient in raw cotton.

Sesame. Production of sesame in Thailand is not of any great significance owing to limited foreign demand. The establishment of a sesame-oil producing factory in the country could help stimulate local production.

Tobacco. Production of tobacco leaves amounts to about 50,000 tons, most of which is consumed by the Government's tobacco factories. Output is expected to increase in future, with more industries using tobacco leaves and a larger volume of Birley leaves produced for export.

Sugar-cane Owing to marketing difficulties and high production costs, only a very slight increase to 4,000,000 tons by 1966 is expected in the production of sugar-cane. For several years sugar production has exceeded domestic consumption and the excess has been exported under a subsidy plan. In the foreseeable future, the export of sugar is not generally likely to be any easier.

Coconut. A great demand for coconut products exists and increased production needs encouragement. However, this will take time; and to make large scale production economic, replantation in the form of large coconut estates or plantations is essential. The most suitable production locations are the larger islands in the Gulf of Thailand and the southern coastal region.

Fishery products. Production of fresh-water fish is not expected to increase significanty unless the promotion of fish-farming is more successful. There is scope for expansion of brackish-water culture of shrimps, oysters, and fish. An increase in processing and storage facilities could stimulate expansion of deep-sea fishing.

Livestock. No real need to increase the number of livestock apparently exists. Emphasis is being placed on improvement of livestock quality and eradication of animal diseases. Exports of buffaloes, swine, poultry and eggs can be increased considerably. The livestock targets, incidentally, are based on statistics obtained from the 1962 agriculture census.

Timber. The future for timber is not very promising. Owing to past overexploitation, exports of teak have been declining. This trend is likely to continue, but may be offset to some extent by increases in output and export of other varieties of timber.

10. If the agricultural production targets are achieved, the national income will increase by several billion baht. The increase in the national income, in Government revenues, and in the farm population's standard of living, will more than justify the expenditures necessary to bring about those gains.

11. The 1966 physical production targets for the fifteen important crops in Table 2, using 1961 as the base year, indicate an increase for ten crops averaging 5 percent or more per year. Rice is projected at an annual average growth of 3 percent and other crops at less. These growth rates are well below those experienced during 1960, 1961 and 1962, as evident from Table 3. However, this is understandable in view of the tremendous increase in crops such as corn, kenaf and tapioca in response to strong export demand and Government stimulation on the one hand, and better than average favourable weather, on the other. In the next three years the output of the most important crops is not likely to expand at as fast a rate.

12. In the case of animal husbandry, the emphasis will be on quality rather than quantity, having in mind livestock prices in the world market. In forestry, since the output of many varieties of of timber will steadily decrease, substantial increases in production are not set forth as targets.

Table 3

PRODUCTION OF MAJOR AGRICULTURAL PRODUCTS, 1959-1962

(1959=100)

Item	1959		1960		1961		1962	
	1,000 tons	Index	1,000 tons	Index	1,000 tons	Index	1,000 tons	Index
1. Rice	6,770	100	7,834	114	8,247	122	9,254	137
2. Maize	317	100	544	172	597	189	665	210
3. Mung beans	46	100	60	130	41	89	51	111
4. Tapioca	1,083	100	1,222	113	1,726	159	2,077	192
5. Sugar-cane	4,988	100	5,382	108	3,984	80	3,155	63
6. Castor beans	34	100	43	126	33	79	43	126
7. Ground nuts	124	100	152	123	108	87	111	89
8. Sesame	17	100	19	112	12	71	16	94
9. Soya beans	23	100	26	113	24	104	30	130
10. Cotton	37	100	53	143	38	103	42	113
11. Kenaf and jute	54	100	188	348	351	650	200	370
12. Tobacco leaves	67	100	74	110	48	72	48	72
13. Yang	174	100	171	98	186	107	195	112

Financing Agriculture Development

13. The main sources of public funds for financing the development of the agricultural sector are set forth in the table below. The Budget allocations are based on priority considerations and estimates of foreign assistance take account of existing and prospective loans and grants. A more detailed statement, on a project basis, appears in the Appendix tables.

Table 4

AGRICULTURAL DEVELOPMENT PLAN EXPENDITURES*

F.Y. 1964-F.Y. 1966

(In millions of baht)

Item	F.Y.1964	F.Y.1965	F.Y.1966	Total
Budget				
1. Agricultural economics research and farm management	1.81	2.50	3.00	7.31
2. Regional research and extension	5.02	7.00	9.30	21.32
3. Agricultural aviation services	2.20	2.30	2.50	7.00
4. Field crops	38.95	43.31	46.03	128.29
5. Rice	30.25	34.80	39.30	104.35
6. Fisheries	30.10	21.80	23.93	75.83
7. Livestock	35.69	37.42	39.85	112.96
8. Forestry	35.63	39.45	42.55	117.43
9. Irrigation and flood control	295.20	418.43	454.56	1,179.19
10. Land development	22.81	27.50	30.50	80.81
11. Cooperatives and agricultural credit	27.58	39.60	33.30	90.48
12. State enterprises	12.58	16.59	13.09	42·26
Total	538 82	700.70	782.91	2,022.43
Foreign loans				
Irrigation and flood control	98.10	399.50	231.42	729.02
Foreign grants				
USOM	17.00	13.00	11.50	41.10
UNSF	6.40	11.30	13.90	31.60
FAO	4.30	5.20	5.40	14.90
Colombo Plan	8.00	9.00	11.00	28.00
"Third countries" and others	8.00	9.00	11.00	28.00
Total	43.70	47.50	52.40	143.50
Grand total	680.62	1,147.70	1,066.53	2,899.95

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* Excludes 80 million baht of anticipated contributions from state enterprisses out of their own resources. (See Chapter 13.)

Programmes / Projects

14. The major agricultultural programmes and projects during the secons half of the Six Year Development Plan and related aspects are reviewed below.

15. **Irrigation and flood control.** Over and above the increase in agricultural output that will result from the extension of the area under cultivation, a considerable increase may be expected to come from the efforts of Goverment to extend irrigation and flood control. These will be the prime contributing factors in the increases of paddy production and of crops grown in rotation with rice. The development plan for agriculture has therefore made large provisions for the Department of Irrigation. Budget appropriations during 1964-1966 are expected to amount to almost 1.2 billion baht. Vast sums are needed for irrigation projects, but the successful completion of the important and high-priority projects will yield handsome returns far above the initial sums expended.

16. In the first three years of the National Economic Development Plan (1961-1963), the area under the command of irrigation has increased by about 400,000 rai. In 1963, the total area under effective irrigation is about 10.4 million rai, which can be divided as follows;

	Number of rai
State irrigation (28 projects)	8,662,000
People's irrigation (217 projects)	1,383,750
Water tanks and storage (212)	360,830
Total	10,406,580

17. The above total figure includes 5.4 million rai under the Chao Phraya Project, which can be regarded as completed except for drainage, although of the 5.4 millionrai about 2 million still a wait the construction of water distribution channels and the release of water for summer cropping from the Yanhee project. The Yanhee irrigation project is part of the Greater Chao Phraya irrigation project.

18. In the last three years of the National Economic Development Plan, the areas under effective irrigation are expected to increase by 900,000 rai, making the total area under effective irrigation for the whole country 11.3 million rai, or about one-fifth of the area under cultivation of crops requiring irrigation, which is about 55 million rai.

19. The following table shows the increases in irrigated areas at the end of the Plan period, and the increases in irrigated areas resulting from the actual completion of projects commenced but not completed in the Plan period:-

Table 5

IRRIGATED AREAS FROM IRRIGATION PROJECTS IN THE DEVELOPMENT PLAN

(In thousands of rai)

Projects	Increased area 1966	Total irrigated areas	Completion date
A. State irrigation			
Northern Region			
1. Mae Yom, Prae	150	224	1968
2. Kiw Lom, Lampang	-	45	1967
3. Mae Taeng, Chiengmai	50	150	1967
Northeastern Region			
4. Lam Pow, Kalasin	70	100	1967
5. Lam Pra Plerng, Korat	40	60	1967
6. Lam Oon, Skolnakorn	-	165	1969
7. Lam Chee, Chaiyapoom	-	100	1969
8. Lam Ta Kong, Korat	-	237	1967
Central Plains			
9. Kaeng Kra Chan, Petchburi	-	330	1967
Southern Region			
10. Ta-chiad, Patalung	-	100	1970
Total	310	1,411	
B. People's irrigation			
1. Chao Phraya ditches and dykes			1967
2. Muang Fai	215		
3. Flood control	312		
4. Irrigation tanks, Northeast	64		
Total	592		
C. Large dam irrigation			
1. Meklong	-	2,450	1969
2. Ta-Pla	(Flood control)		1969
3. Phumipol	(Chao Phraya project areas)		1964
Total	-	2,450	
D. Multi-purpose irrigation	-	150	1967
1. Nam Pong. Khonkaen	-	150	1967
2. Nam Pung, Sakolnakorn	-	100	1967
*3. Pattani, Yala	-	200	1969
Total	-	450	
. Grand Total	902	4,311	

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* This project is still only under investigation and therefore the figures given are very tentative.

20. The last three years of the Plan, from 1964-1966, will see the start of work on many irrigation projects which when completed will bring another 4.3 million rai under irrigation. However, most of these projects will not be completed by 1966; in 1966, therefore, there will only be an addition of 900,000 rai to the total area under effective irrigation. Apart from these, work will be started on the survey of many other projects, including the 16 large water storages in the Northeast region as set forth in the Development Plan for the Northeast of Thailand, and the Pa-Mong Dam project which is part of the Mekhong Development Plan.

21. The development of irrigation during the last three years of the Plan will increase irrigated areas as shown below:-

	Irrigated areas 1963	Irrigated areas 1966
State irrigation	8,662,000	8,972,000
People's irrigation	1,383,750	1,912,050
Irrigation tanks	360,829	424,829
Total	10,406,759	11,308,879

22. In general, the development of irrigation from 1961-1963 has been satisfactory. In the past three years, the Mae Lao project and the western project in the Chao Phraya area have been completed. The Mae-Yom project has been delayed for a number of reasons. As for the Greater Chao Phraya project, which is the backbone of the irrigation system in Thailand, there has been some delay in the construction of the distribution channels. However, a loan from the International Bank for Reconstruction and Development in 1963 will help to speed up the work. The same applies to the Kaeng-Krachan Project. Eight water storage reservoirs have been constructed in the Northeast, and three more remain to be constructed. The phumipol Dam project, which is a multi-purpose project and of great importance in generating hydro-electricity and in feeding the Greater Chao Phraya Project with water in the summer, will be completed in 1964, as planned.

23. In appraising the development of irrigation in Thailand, it may be noted that the standard of engineering construction are high and the technical competence of the officials in the Irrigation Department has never been in question. However,

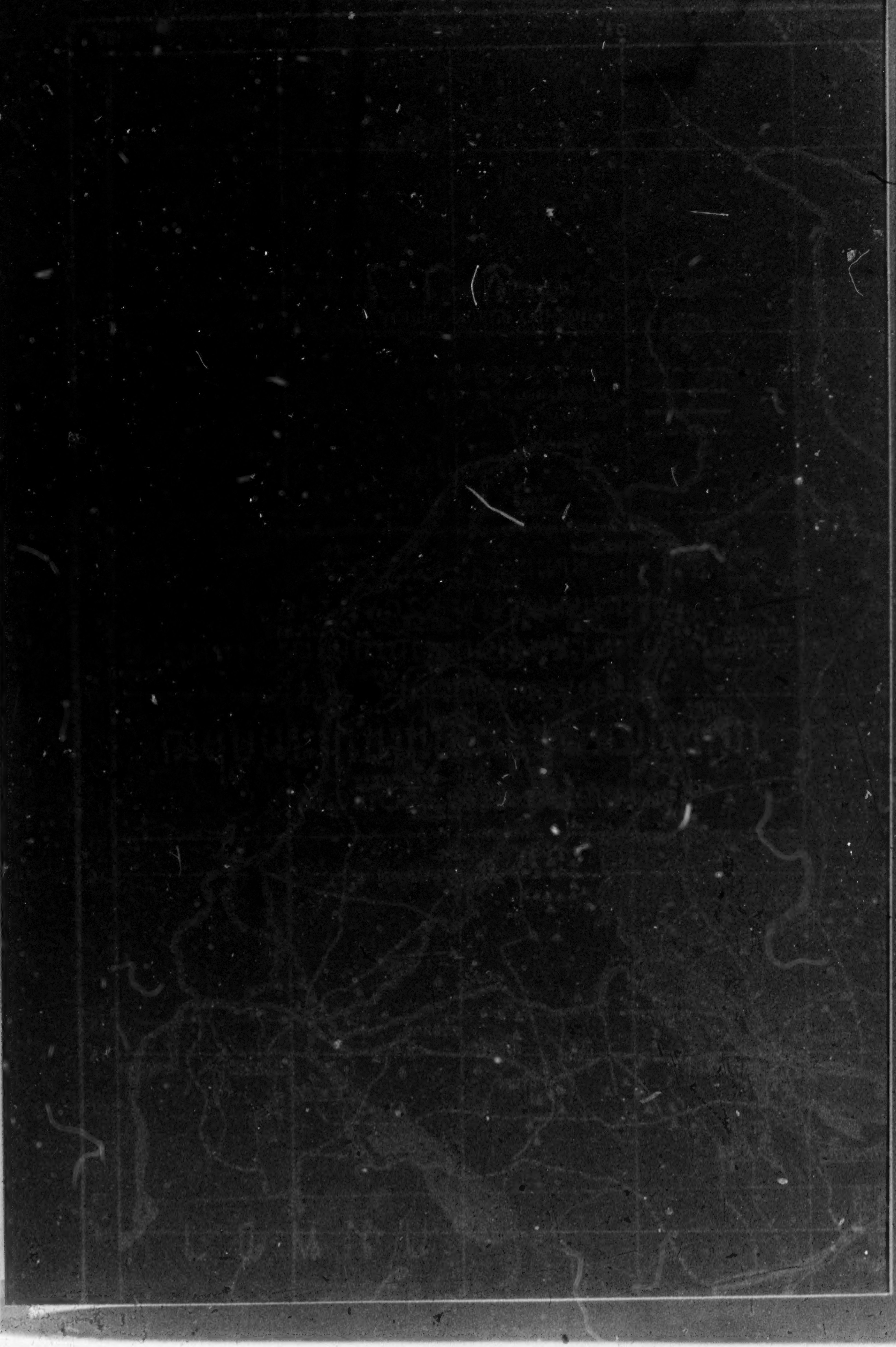
in economic terms, irrigation projects will be truly completed only when the irrigated areas have a complete system of water distribution and disposal, and have received the benefits of agricultural research and agricultural promotion.

24. The most important irrigation projects during the Plan period are the following;-

a. **Yanhee Project:** The construction of the Phumipol Dam, the largest in South-East Asia, will be completed within the scheduled time, that is in 1964. This is the largest economic development project in Thailand. The total hydro-electric power generated by this dam will ultimately be 560,000 kilowatts, but to begin with 140,000 kilowatts will be produced in 1964, Apart from hydro-electricity, other benefits from this project are the feeding of water to the Greater Chao-Phraya project area, totalling 1.5 million rai in the rainy season, and 2 million rai in summer; the control of floods in the Kampaengpetch-Tak-Nakorn Sawan areas; and the benefits from fishery and water communications. The total cost of the project is 3,500 million baht; of this 1,000 million baht will be paid from the revenues of the project itself.

b. **The Nan River Project**: This project is also multi-purpose and second in importance only to the Yanhee project. Work on dam construction will start in 1965. From the survey already made, it is estimated that it will be capable of generating around 250,000 kw of hydro-electric power. The project will feed water to the Greater Chao Phraya area on the same scale as the Yanhee project, that is, 1.5 million rai in the rainy season and 2 million rai in summer. Moreover, it will control the floods on the Pitsanuloke plain for an area of 3 million rai. It is expected that the project will be financed by a loan from the IBRD.

c. **The Greater Mae-Klong Project**: This is the second most important project in the development of irrigation in the Central Plain, next to the Greater Chao Phraya project. A diversion barrage will be built at Amphur Ta-Muang in the Karnchanaburi province. The total irrigated area will be about 2,427,000 million rai, covering areas in seven provinces, and adjoining the Greater Chao Phraya project areas in the east, and the Petchburi



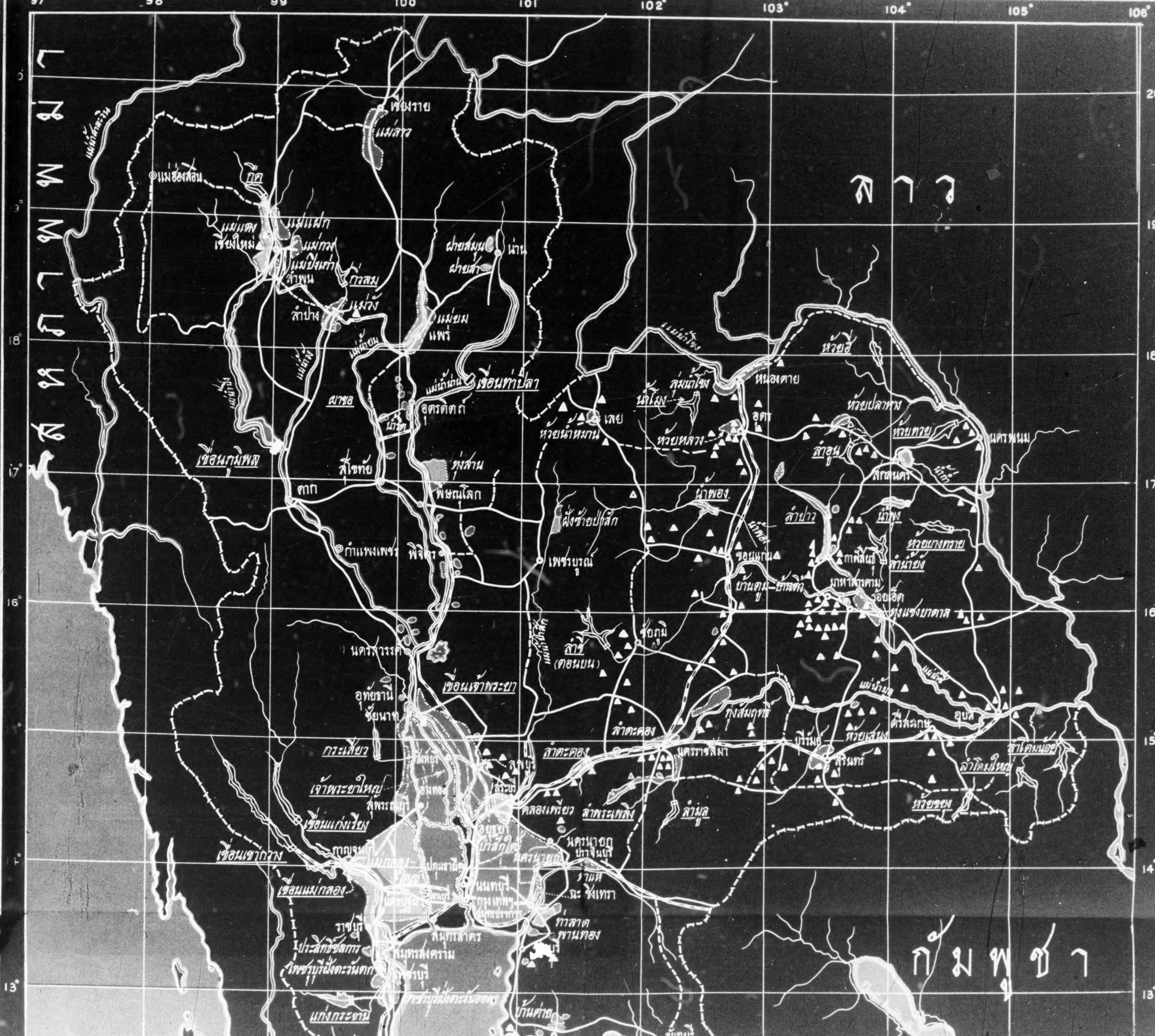
project in the south, making the total area under irrigation in the three projects about 8 million rai. The project is expected to be financed by a U.S. $27,000,000 loan from the IBRD; and, in addition, there will be an expenditure in local currency of 840 million baht. After the completion of the diversionary barrage at Ta-Muang, the second and third stages of the project will include the construction of storage dams at Kao-Kwang and at Kang-Reang on the Kwai Noi and Kwai Yai.

d. **The Greater Chao Phraya Project:** By far the most important single project for the development of Thai agriculture, the Greater Chao Phraya project began with the construction of the Chainat dam, which was financed by a U.S. $18,000,000 IBRD loan in 1953 and expenditure in local currency of 1,000 million baht. In the first three years, the construction of the main water distribution channels in eleven zones of the project area has been completed. Work on the channel embankments was started in 1962, financed by a U.S. $3,500,000 IBRD loan in 1963. Embankment works are expected to be finished by 1967, covering an area of 5 million rai. During the next three years water drainage works will be started and water distribution works will be completed. The areas within the Greater Chao Phraya project are the most important rice-growing areas of Thailand and are expected to produce not less than 1.5 million tons of rice per annum after the benefits from the irrigation project are reaped in full.

25. Apart from the construction of public or state irrigation projects, people's irrigation projects and water storage projects in the Northeast, the Department of Irrigation also will conduct surveys during the next three years on other important irrigation projects, such as the project in Chiengmai, the Kaeng Luang project in Sukothai, the Kampaengpetch project, the Lam-Chee project at Chaiyaopom, and other large water-storage projects in the Northeast. If proved feasible, construction will commence in the near future.

26. To sum up, it can be said that within the six year period of the Plan, irrigation in Thailand will have progressed at a remarkable rate quite unprecedented in the history of the country. This great extension of irrigation will form the basis for the fuller development of agriculture in future years.

27. **Agricultural Crops Research.** In 1963 the following research and experimental stations and units were under the Departments of Agriculture and Rice :-



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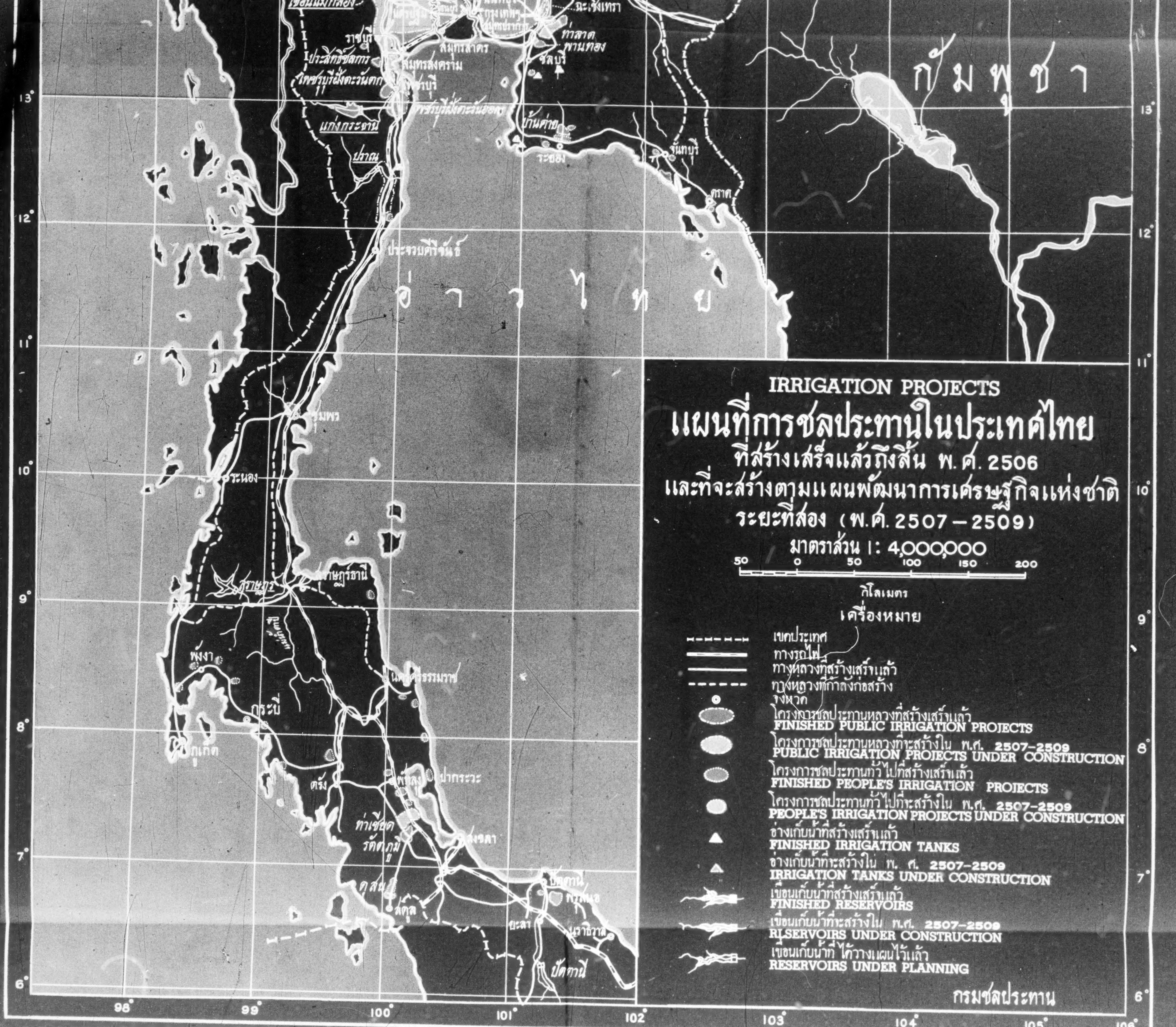
สหภาพพม่า
ลาว
กัมพูชา
แม่น้ำสาละวิน
เชียงราย
แม่ลาว
แม่ฮ่องสอน
กิ่ว
แม่แฝก
แม่แตง
เชียงใหม่
แม่กวง
แม่ปิงเก่า
ลำพูน
กิ่วลม
แม่วัง
ลำปาง
ฝายสมุน
ฝายส่า
น่าน
แม่ยม
แพร่
แม่น้ำยม
แม่น้ำวัง
แม่น้ำปิง
เขื่อนท่าปลา
แม่น้ำน่าน
อุตรดิตถ์
ผาซอ
น้ำริด
เขื่อนภูมิพล
สุโขทัย
ตาก
ทุ่งสาน
พิษณุโลก
กำแพงเพชร
พิจิตร
เพชรบูรณ์
ฝั่งซ้ายป่าสัก
แม่น้ำป่าสัก
นครสวรรค์
อุทัยธานี
ชัยนาท
เขื่อนเจ้าพระยา
กระเสียว
เจ้าพระยาใหญ่
สุพรรณบุรี
เขื่อนแก่งเรียง
เขื่อนเขากวาง
กาญจนบุรี
แม่กลอง
เขื่อนแม่กลอง
ราชบุรี
ประสิทธิ์ชลกร
เพชรบุรีฝั่งตะวันตก
เพชรบุรี
แก่งกระจาน
สมุทรสาคร
สมุทรสงคราม
นนทบุรี
กรุงเทพฯ
สมุทรปราการ
ปทุมธานี
อยุธยา
ป่าสักใต้
ลพบุรี
สระบุรี
คลองเพรียว
นครนายก
ปราจีนบุรี
ฉะเชิงเทรา
ท่าลาด
พานทอง
บ้านค่าย
เลย
ห้วยน้ำหมาน
น้ำโมง
ลุ่มน้ำโขง
แม่น้ำโขง
หนองคาย
ห้วยหลวง
อุดร
ห้วยอีร
ห้วยปลาหาง
ห้วยทวย
นครพนม
ลำอูน
สกลนคร
น้ำก่ำ
น้ำพอง
ลำปาว
น้ำพุง
ห้วยบางทราย
ลำน้ำยัง
ขอนแก่น
บ้านตูม
บ้านไผ่
กาฬสินธุ์
มหาสารคาม
ร้อยเอ็ด
ทุ่งแซงบาดาล
ชัยภูมิ
ลำชี
(ตอนบน)
แม่น้ำชี
แม่น้ำมูล
ทุ่งสัมฤทธิ์
ลำตะคอง
นครราชสีมา
ลำพระเพลิง
ลำมูล
บุรีรัมย์
สุรินทร์
ห้วยเสนง
ศรีสะเกษ
อุบล
ลำโดมน้อย
ลำโดมใหญ่
ห้วยขอน


IRRIGATION PROJECTS

แผนที่การชลประทานในประเทศไทย
ที่สร้างเสร็จแล้วถึงสิ้น พ.ศ. 2506
และที่จะสร้างตามแผนพัฒนาการเศรษฐกิจแห่งชาติ
ระยะที่สอง (พ.ศ. 2507 – 2509)

มาตราส่วน 1: 4,000,000

กรมชลประทาน

50 0 50 100 150 200
กิโลเมตร
เครื่องหมาย
เขตประเทศ
ทางรถไฟ
ทางหลวงที่สร้างเสร็จแล้ว
ทางหลวงที่กำลังก่อสร้าง
จังหวัด
โครงการชลประทานหลวงที่สร้างเสร็จแล้ว
FINISHED PUBLIC IRRIGATION PROJECTS
โครงการชลประทานหลวงที่จะสร้างใน พ.ศ. 2507-2509
PUBLIC IRRIGATION PROJECTS UNDER CONSTRUCTION
โครงการชลประทานทั่วไปที่สร้างเสร็จแล้ว
FINISHED PEOPLE'S IRRIGATION PROJECTS
โครงการชลประทานทั่วไปที่จะสร้างใน พ.ศ. 2507-2509
PEOPLE'S IRRIGATION PROJECTS UNDER CONSTRUCTION
อ่างเก็บน้ำที่สร้างเสร็จแล้ว
FINISHED IRRIGATION TANKS
อ่างเก็บน้ำที่จะสร้างใน พ.ศ. 2507-2509
IRRIGATION TANKS UNDER CONSTRUCTION
เขื่อนเก็บน้ำที่สร้างเสร็จแล้ว
FINISHED RESERVOIRS
เขื่อนเก็บน้ำที่จะสร้างใน พ.ศ. 2507-2509
RLSERVOIRS UNDER CONSTRUCTION
เขื่อนเก็บน้ำที่ได้วางแผนไว้แล้ว
RESERVOIRS UNDER PLANNING
กัมพูชา
อ่าวไทย
ฉะเชิงเทรา
ท่าลาด
พานทอง
ราชบุรี
สมุทรสาคร
สมุทรสงคราม
ชลบุรี
เพชรบุรี
แก่งกระจาน
บ้านค่าย
ระยอง
จันทบุรี
ปราณ
ตราด
ประจวบคีรีขันธ์
ชุมพร
ระนอง
สุราษฎร์ธานี
พังงา
นครศรีธรรมราช
กระบี่
ภูเก็ต
ตรัง
พัทลุง
ปากระวะ
ท่าเชียด
รัตภูมิ
สงขลา
สตูล
ปัตตานี
ยะลา
นราธิวาส
13°
12°
11°
10°
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8°
7°
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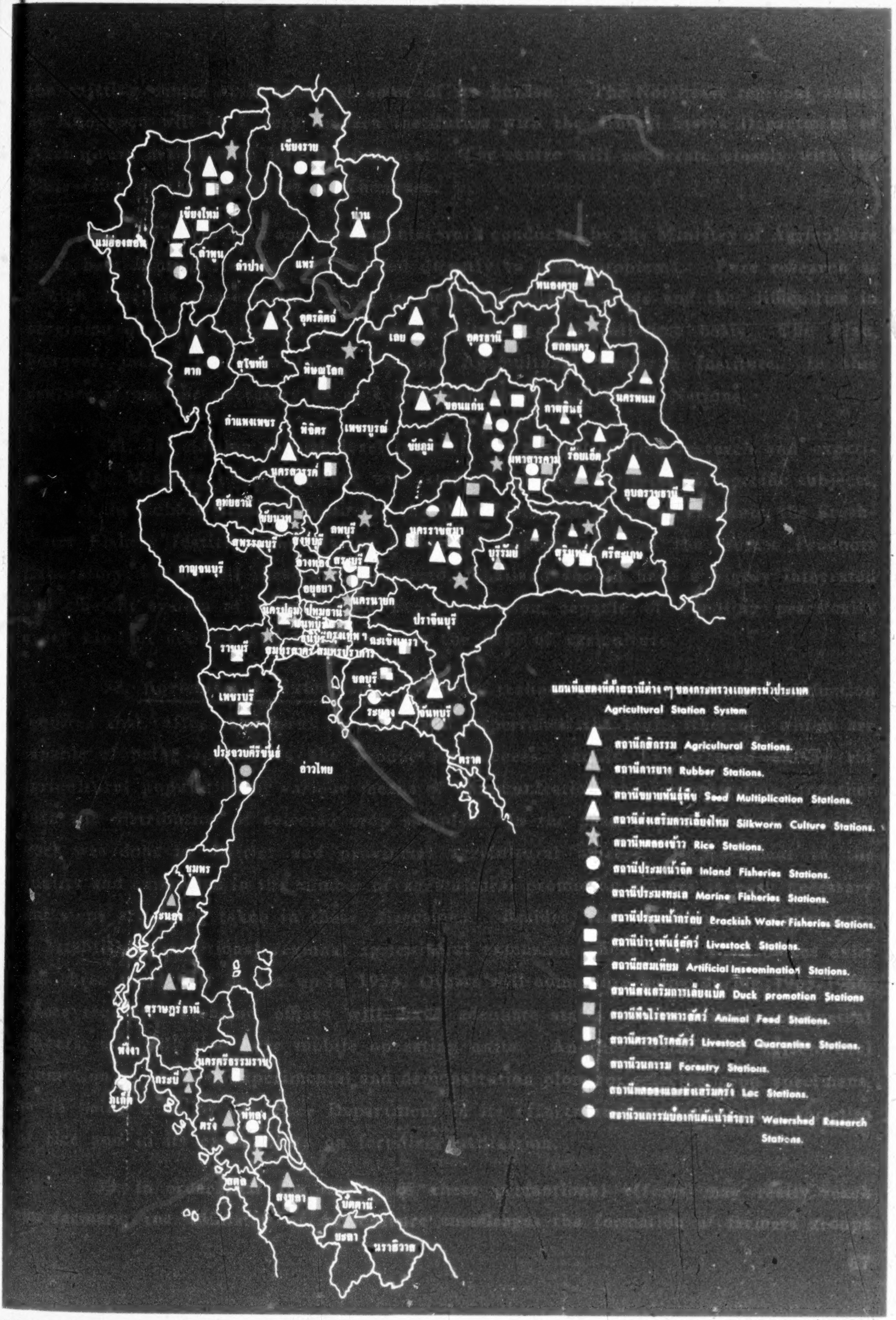
98°
99°
100°
101°
102°
103°
104°
105°

Agricultural stations	22
Silkworm breeding promotion stations	5
Seed multiplication stations	8
Rubber stations	10
Rice experiment stations	18
Crop disease eradication stations	5
Rice disease eradication stations	4
Rubber experiment plantations	4
Rubber-growing plots	10
Total	86

28. The number of research stations is probably quite adequate for present needs. It may be necessary to establish additional stations to meet the demands created by the expansion of the area under cultivation. The most immediate problem, however, is to improve the efficiency of existing stations, which are generally too small and heavily under-staffed in relation to the volume and the character of the work to be done. The Ministry of Agriculture has recognized this deficiency and has been trying to trying to make improvements. Under the Plan, the Ministry of Agriculture will undertake the establishment of regional agricultural centres. These centres will be relatively large in size and the scope of their work will be enlarged. They will be adequately staffed with highly competent technicians, so that research will be meaningful and fruitful. Moreover, these regional centres will serve as regional administrative offices of the Ministry, and will also train agricultural extension officers. In moving in this new direction, the Ministry of Agriculture will select a suitably located existing station for transformation into a regional centre. Other stations within that region will then fall within tee administrative jurisdiction of the regional centre. They will continue to be research stations as before, but responsible only for the research and experiment of the neighbourhood and for the promotion and diffusion into their own areas of the fruits of the research of the regional centre, particularly the introduction of new varieties of crops.

29. The Ministry of Agriculture will establish at least two regional agriclutural centres by the end of 1996, one at Khonkaen in the Northeast the other at Chainat in the Greater Chao Phraya area. Apart from these, an experimental farm is proposed to be established at Kalasin, with the assistance of the UNSF under the Lower Mekhong Development Project. In addition, if financial resources permit, a regional agricultural centre for the Central Plain will be established near Bangkok; this centre will relieve



เชียงราย
เชียงใหม่
แม่ฮ่องสอน
ลำพูน
ลำปาง
แพร่
น่าน
อุตรดิตถ์
ตาก
สุโขทัย
พิษณุโลก
เลย
อุดรธานี
หนองคาย
สกลนคร
นครพนม
ขอนแก่น
กาฬสินธุ์
กำแพงเพชร
พิจิตร
เพชรบูรณ์
ชัยภูมิ
มหาสารคาม
ร้อยเอ็ด
อุบลราชธานี
นครสวรรค์
อุทัยธานี
ชัยนาท
ลพบุรี
นครราชสีมา
บุรีรัมย์
สุรินทร์
ศรีสะเกษ
สุพรรณบุรี
สิงห์บุรี
อ่างทอง
สระบุรี
กาญจนบุรี
อยุธยา
นครนายก
นครปฐม
ปทุมธานี
นนทบุรี
กรุงเทพฯ
ฉะเชิงเทรา
ปราจีนบุรี
ราชบุรี
สมุทรสาคร
สมุทรปราการ
เพชรบุรี
ชลบุรี
ระยอง
จันทบุรี
ตราด
ประจวบคีรีขันธ์
อ่าวไทย
ชุมพร
ระนอง
สุราษฎร์ธานี
พังงา
นครศรีธรรมราช
กระบี่
ภูเก็ต
ตรัง
พัทลุง
สตูล
สงขลา
ปัตตานี
ยะลา
นราธิวาส

แผนที่แสดงที่ตั้งสถานีต่าง ๆ ของกระทรวงเกษตรทั่วประเทศ

Agricultural Station System

▲ สถานีกสิกรรม Agricultural Stations.
▲ สถานีการยาง Rubber Stations.
▲ สถานีขยายพันธุ์พืช Seed Multiplication Stations.
▲ สถานีส่งเสริมการเลี้ยงไหม Silkworm Culture Stations.
★ สถานีทดลองข้าว Rice Stations.
● สถานีประมงน้ำจืด Inland Fisheries Stations.
● สถานีประมงทะเล Marine Fisheries Stations.
● สถานีประมงน้ำกร่อย Brackish Water Fisheries Stations.
■ สถานีบำรุงพันธุ์สัตว์ Livestock Stations.
☒ สถานีผสมเทียม Artificial Inseomination Stations.
■ สถานีส่งเสริมการเลี้ยงเป็ด Duck promotion Stations
■ สถานีพืชไร่อาหารสัตว์ Animal Feed Stations.
■ สถานีตรวจโรคสัตว์ Livestock Quarantine Stations.
● สถานีวนกรรม Forestry Stations.
● สถานีทดลองและส่งเสริมครั่ง Lac Stations.
● สถานีวนกรรมป้องกันต้นน้ำลำธาร Watershed Research Stations.

the existing centre at Bangken of some of its burden. The Northeast regional centre at Khonkaen will be a very modern institution with the United States Department of Agriculture assisting in its establishment. The centre will cooperate closely with the University of the Northeast at Khonkaen.

30. The research and experimental work conducted by the Ministry of Agriculture is at best applied research and related directly to local problems. Pure research at a high level is non-existent, owing to lack of available funds and the difficulties in obtaining qualified scientists to conduct research on a full-time basis. The Plan, however, makes provision for a National Agricultural Research Institute. In this venture it may be necessary to seek assistance from the United Nations.

31. In addition to high-level research and general applied research and experiment, the Ministry of Agriculture will establish research institutes for specific subjects, such as the Rubber Research Institute, the Rice Protection Research Institute, the Fresh-Water Fishery Institute, the Marine Biological Laboratory, and the Forest Products Laboratory. When all these are completed, Thailand should have a highly integrated and efficient system of research and experimentation, capable of handling practically every kind of activity and every level in the field of agriculture.

32. **Agricultural Extension**. Modern technology in agricultural production requires that, after successful research and experiment the fruits thereof, which are capable of being applied to the production process, should be diffused among the agricultural population by various means of communication and demonstration, together with the distribution of selected crop samples. In the past, promotion and extension work was done by district and provincial agricultural officers. Improvement in the quality and expansion in the number of agricultural promotion officers is very necessary and steps are being taken in these directions. Besides, the Ministry of Agriculture is establishing additional regional agricultural extension offices. Two such offices exist and three more will be set up in 1964. Others will come into being during 1965-1966. These regional extension offices will have adequate staffs of technically competent officers, and will also have mobile operating units. Another method of agricultural promotion is to have experimental and demonstration plots for selected crop specimens, as is being done by the Rice Department in its efforts to propagate better varieties of rice and in its experiments on fertilizer utilization.

33. In order that the results of these promotional efforts may really reach the farmers, the Ministry of Agriculture encourages the formation of farmers groups

and young farmers associations. In areas covered by community development programmes, there will be the closest cooperation with the community development officers. To encourage the formation of these farmers groups is highly important and will be increasingly so since it will encourage the farmers to help themselves, and will enable them to receive and utilize more fully the many services which the State offers them.

34. In addition, the Ministry of Agriculture has already established an agricultural broadcasting service, which will have to expand so that it can become one of the principal means at the disposal of the Government for promoting the expansion of production and better marketing.

35. In the next three years, these promotional efforts will be specially directed towards the Northeast region of Thailand and will be done with the assistance of the United States Government under the Community Development Programme.

36. **Development of Fisheries.** In the field of fresh-water fishing, the Department of Fisheries has 13 fishery stations. Seven of these are in the Northeast and four in the North. The Central Plain has only one station at Chainat, and this will be reorganized and expanded and will become a part of the regional agricultural centre for the Chao Phraya area, beginning in 1964. The South region also has one fishery station at Kuan Kut in Patalung province and this station is to be transferred to the province of Suratthani. The Department of Fisheries will establish only one new fishery station during 1964-1966 in Uttaradit province, near the proposed Nan River Dam. In general, the main emphasis will be placed on improving existing stations rather than establishing new ones. Assistance will be sought from abroad in the establishment of a Fresh Water Fisheries Research Institute. As part of the extension work, fish-ponds and fish-farming will be encouraged and it will be necessary to have more officials, and perhaps also more funds to lend to fish-farmers on a revolving basis.

37. In the field of brackish-water fishing the Department has two service stations, one at Prachuab and the other at Chantaburi. It is expected that brackish-water fishing will make impressive progress within the Plan period, since Thailand has a long sea coast, many parts of which are suitable for shrimp-farming, and there is ample room for further expansion in this field.

38. Marine fishing has always been an important occupation in Thailand, although only recently has there been an awakening to its potentials. In 1961-1963 the Department of Fisheries established two new marine fishery stations, at Songkhla and Phuket, in accordance with the Goverment's Development Plan for the South. In addition, two new deep-sea survey-ships were bought in order to survey fishing beds

in the Gulf of Thailand and in the Indian Ocean in the proximity of Thailand's south-western shores. Further work will be done for the promotion of deep-sea fishing and new fishing techniques will be introduced with conservation in mind. A laboratory for marine biological research will be established with the assistance of West Germany. It is expected that fishing will become an industry of growing importance in the Thai economy.

39. **Livestock Development.** The work of the Department of Livestock Development is concentrated on animal husbandry and disease control. During the last three years, progress in disease control has been satisfactory. In the next three years more emphasis will be placed on the promotion and extension of animal husbandry. In 1963, there were ten livestock-breeding stations, nine artificial insemination stations, two duck-breeding extension stations, and five animal nutrition and forage crops stations. In addition, there is a dairy station at Muak-Lek, a Thai-Danish joint venture. During the next three years, the Department is expected to establish two new stations, at Sakolnakorn and Tak, and possibly a dairy station at Chiengmai. The stations at Ta-Pra and Chainat will be reorganized and become part of the regional agricultural centres.

40. In animal husbandry the emphasis will be on improving the quality rather than expanding numbers. Steps will be taken to encourage farmers to breed more pigs and poultry of good strains. As for buffaloes and cattle, improvement in quality will be encouraged by giving farmers instruction in the techniques of animal castration and artificial insemination. Large-scale livestock ranches are still very rare in Thailand and will remain so unless great improvements are made in animal nutrition. forage crops, and marketing channels. Thus, the structure of livestock farming in Thailand will remain essentially a mixed enterprise, that is partly crop farming and partly animal farming. .If conditions in the domestic and foreign markets become favourable, animal husbandry in Thailand will be able to expand at a much higher rate than in the past.

41. **Forestry Development.** In the original National Economic Development Plan it was a stated policy that 50 percent of the total area of the country, or about 160 million rai, will be conserved as forests. Of the conserved areas, 60 million rai fall into the category of watershed forests the remainder are dense forests and forests with valuable timber. In the future, if made necessary by the increase in population, part of the forest area which is neither an important watershed area nor contains highly valuable timber will be reduced to some extent.

42. The forestry projects of the Royal Forestry Department can be divided into three categories: forest control, silviculture, and research. For the control of the forest, the Department has established during the last three years forest protection units and a forest police division was created to cooperate closely with the Department. The Forest Law was also amended. These actions have helped reduce very considerably the amount of illicit and destructive felling. During 1964-1966, the forest protection and patrol units will be expanded and strengthened. The fixing of the boundaries of conserved forest will also be speeded up, so that it may not, by lagging behind, impede the work of land classification.

43. As regards silviculture, attention will be given to forest plantations, and where necessary, reafforestation in the watershed areas. The purpose of the latter is to conserve soil and water resources rather than to hope for timber. A start will be made around the headwaters of the Ping River.

44. The Royal Forest Department has created, in the last three years, three National Parks at Kao Salop, Kao Yai and Salaeng Luang. In the next three years, additional National Parks will be created at Larn Sarng in Tak Province and at Khun Tarn in Lampoon Province. Also, more attention will be given to the preservation of wild life, by creating wild life conservation areas.

45. In the field of research, a laboratory for forest and timber products has been established and will be expanded with assistance from West Germany. Surveys will be made of soft woods with a view to the production of paper-pulp.

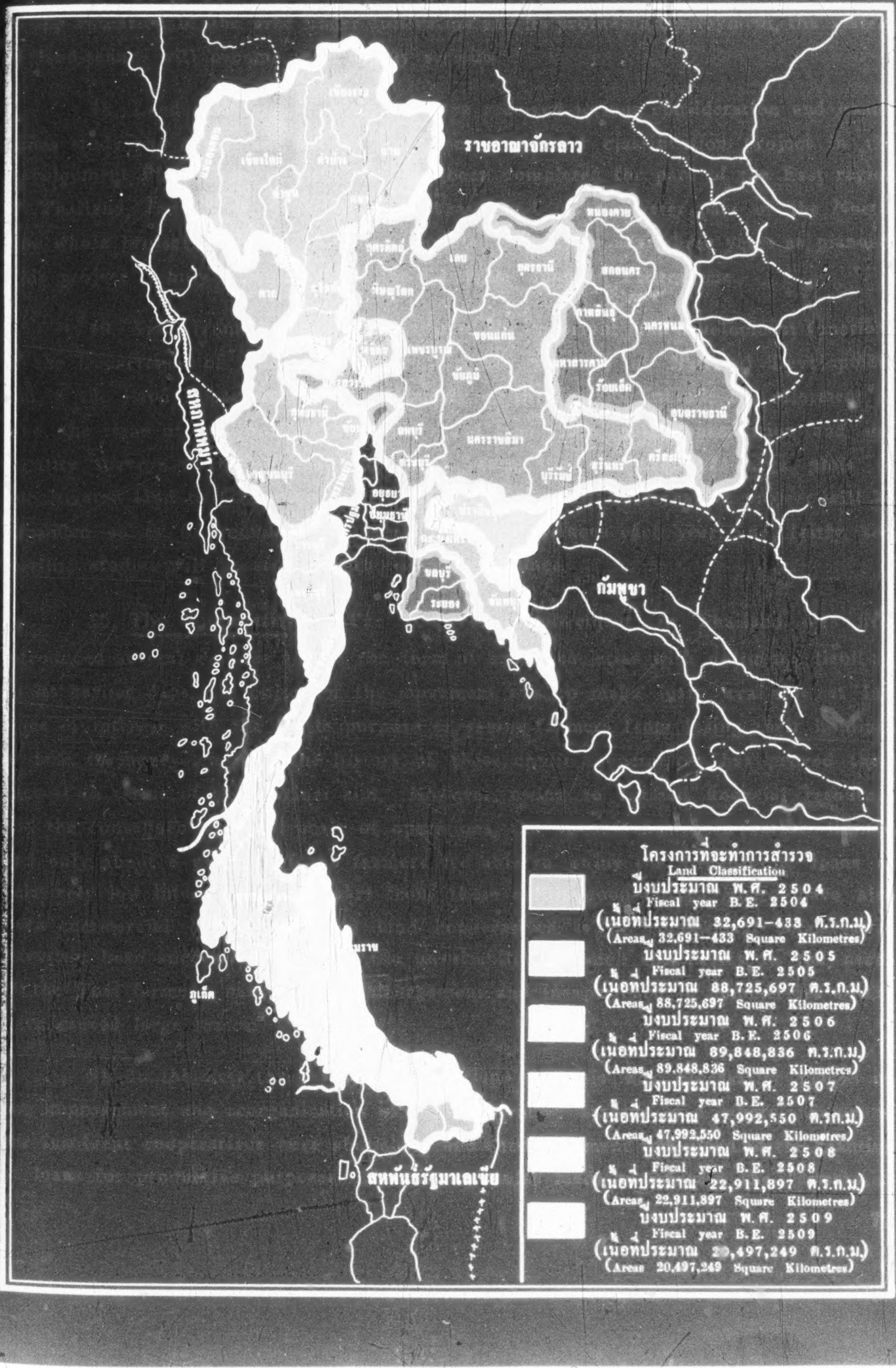
46. Another line of development deserving serious consideration is the encouragement of private enterprise to grow soft woods for industrial purposes. Such undertakings could have as beneficial by-products soil conservation and the protection of watershed areas, and would help reduce the cost to the Government of forest plantations and reafforestation.

47. **Land Development.** Land development is a long and continuing process involving land policy determinations, improvements in the land-tenure system, and other complex features. In 1963 land holdings accounted for 71.4 million rai, or 22 percent of the total land area of the country. Areas under cultivation are expected to increase by 30 million rai in the future. The long range aims must be that each farm family should own the land on which a living can be peacefully earned, and that the countrys system of agricultural production should be transformed from subsistence agriculture

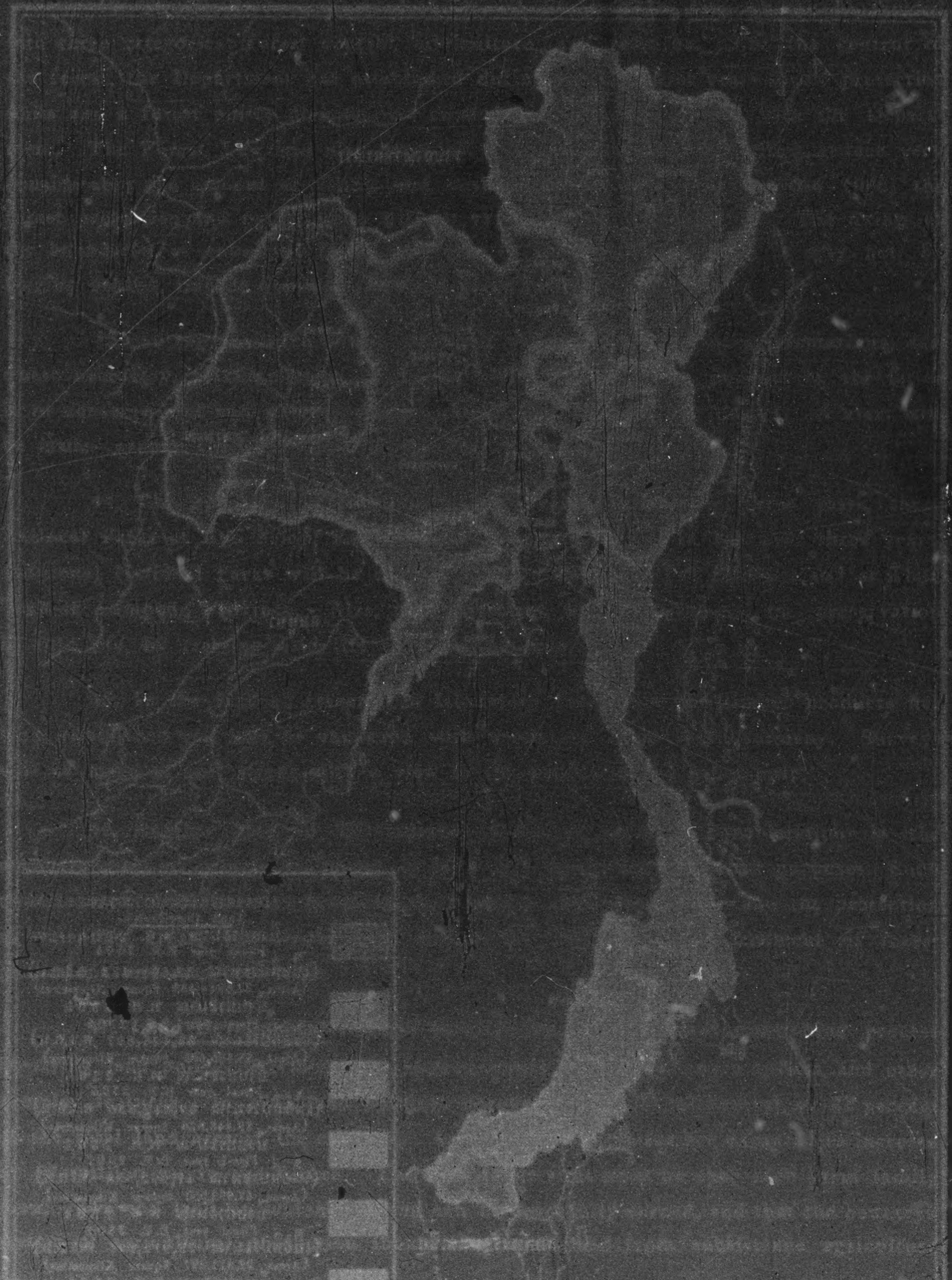
แผนที่แสดงโครงการและแผนงานสำรวจจำแนกประเภทที่ดิน

Map of Land Classification Project

ระหว่าง
ปีงบประมาณ พ.ศ. 2504 ถึง พ.ศ. 2509
B.E. 2504–2509
รวม 6 ปี



ราชอาณาจักรลาว
กัมพูชา
ประเทศพม่า
สหพันธ์รัฐมาเลเซีย
เชียงใหม่
ตาก
อุตรดิตถ์
พิษณุโลก
เลย
อุดรธานี
หนองคาย
สกลนคร
กาฬสินธุ์
นครพนม
ขอนแก่น
เพชรบูรณ์
ชัยภูมิ
มหาสารคาม
ร้อยเอ็ด
อุบลราชธานี
ลพบุรี
สระบุรี
นครราชสีมา
บุรีรัมย์
สุรินทร์
ศรีสะเกษ
กาญจนบุรี
อยุธยา
ปทุมธานี
ชลบุรี
ระยอง
จันทบุรี
ภูเก็ต
มราช
โครงการที่จะทำการสำรวจ
Land Classification
ปีงบประมาณ พ.ศ. 2504
Fiscal year B.E. 2504
(เนื้อที่ประมาณ 32,691-433 ตร.ก.ม.)
(Areas 32,691–433 Square Kilometres)
ปีงบประมาณ พ.ศ. 2505
Fiscal year B.E. 2505
(เนื้อที่ประมาณ 88,725,697 ตร.ก.ม.)
(Areas 88,725,697 Square Kilometres)
ปีงบประมาณ พ.ศ. 2506
Fiscal year B.E. 2506
(เนื้อที่ประมาณ 89,848,836 ตร.ก.ม.)
(Areas 89.848,836 Square Kilometres)
ปีงบประมาณ พ.ศ. 2507
Fiscal year B.E. 2507
(เนื้อที่ประมาณ 47,992,550 ตร.ก.ม.)
(Areas 47,992,550 Square Kilometres)
ปีงบประมาณ พ.ศ. 2508
Fiscal year B.E. 2508
(เนื้อที่ประมาณ 22,911,897 ตร.ก.ม.)
(Areas 22,911,897 Square Kilometres)
ปีงบประมาณ พ.ศ. 2509
Fiscal year B.E. 2509
(เนื้อที่ประมาณ 20,497,249 ตร.ก.ม.)
(Areas 20,497,249 Square Kilometres)



to commercial agriculture. In view of rapid population increase and the natural limits to the extension of the area under cultivation and its profitable employment, the system of land-tenure will become increasingly serious.

48. Land development problems have received serious consideration and continuous study and one result is the inclusion of a land classification project in the Development Plan. The classification has been completed for part of the East region of Thailand, for the whole of the Northeast, and for a greater part of the North. The whole project is expected to be completed within the next three years as planned. This project is only a beginning in the Land Development Programme.

40. Apart from the land-tenure system, the important land development functions of the Department of Land Development in the Ministry of National Development and of the Land Department in the Ministry of the Interior include the allotment of land, the issue of land-holding documents and land titles, soil conservation and soil fertility surveys. During the next three years, the allotment of large plots of uncultivated land to farmers will be started and the soil conservation project will be expanded so as to complete the work in two provinces each year, and, lastly, soil fertility studies will be started with foreign assistance.

50. **The Cooperatives.** The cooperative movement in Thailand was first introduced several decades ago in the form of credit societies with unlimited liability. In its earlier days, the object of the movement was to make loans available at low rates of interest with the single purpose of saving farmers from losing their holdings of land to money-lenders. the history of these credit cooperatives has proved their success in terms of the original aim. However, owing to limited financial resources and the consequential small scale of operations, the success has been rather limited and only about 8 percent of the farmers are able to enjoy the benefits of loans at relatively low interest rates. Apart from these credit cooperatives, there have also been commercial cooperatives and land cooperatives. The commercial cooperatives have not been successful owing to the unsuitability of such enterprises to the needs of the Thai farmers; moreover, mismanagement and inexperience in commercial affairs have caused large losses.

51. In the first three years of the Plan emphasis was necessarily placed on the improvement and reorganization of the cooperative system as a whole. Some of the insolvent cooperatives were abolished and encouragement was given to the granting of loans for productive purposes. Efforts were also made to educate the farmers in

a fundamental principle of State-encouraged cooperative: that is, they must depend on the mutual cooperation and collaboration among themselves, and are not to be construed as a permanent service rendered by the State to its farmers. Land improvement cooperatives have been promoted in the Chao Phraya region and the areas allocated to existing land settlement cooperatives have been enlarged. The same policies will be pursued in the next three years, with more vigour and speed. It is planned to establish not less than five production credit cooperatives, to amalgamate the small-sized credit-cooperatives into cooperative unions, and to continue work on the land improvement cooperative project for the Chao Phraya River basin, so that the project will cover, when completed, 10 percent of the total irrigated areas. Another important task is to improve the efficiency and the effectiveness of the Cooperative Bank, perhaps through the raising of its status to an Agricultural Credit Institution.

52. **Agricultural Economic Research and Farm Management.** Owing to the nature of agricultural economics, which involves primarily statistical and technical research work, the subject was not regarded as a development activity in the original National Economic Development Plan. However, its importance is clearly recognized, and encouragement has been given to the Ministry of Agriculture to improve and expand its work in this field. In the new plan of work, the Ministry will have four categories of activity in agricultural economics: agricultural economic research, farm management, marketing of farm products, and agricultural credit. In regard to farm management, development, funds will go into the farm management project for the Chao Phraya region and for Khonkaen. As regards farm marketing, farm commodity price announcements will be given more extensive coverage, and agricultural market centres will be established where suitable. In the field of agricultural credit, a special work unit is being set up to implement that part of the national agricultural credit policy which falls within the responsibility of the Ministry of Agriculture.

53. **Rubber Replanting.** Work on rubber replanting was started, in accordance with the Royal Act for Assisting Rubber Planters, in 1961. In the first two years, about 80,000 more rai were replanted, and the replanting of 100,000 more rai which were damaged by the great storms in 1962 were given top-most priority. The target for rubber replanting is over 2 million rai, to be completed within the next two decades. To achieve this target, an acceleration of effort is essential. Many difficulties have been found in operating this project of an administrative, legal ,and financial chara cter and stemming from the anachronistic system of rubber-holdings prevailing in Thailand. According to a survey, wellover 90 percent of the rubber plantations are very small units of not more than 25 rai. Owing to these small holdings, it is very difficult to carry out replanting because the

planters feel they will not be able to support themselves during the transitional period. One way of meeting this difficulty is to have a mobile felling machine unit to help small planters to clear the old rubber trees; this step is under serious consideration. Other solutions are: to encourage the establishment of small planters' cooperatives which will grant controlled loans to the planters and to encourage planters to grow other crops within the plantations, either as supplementary crops to existing rubber trees or as substitute crops during the transitional period.

54. The rubber stations at Na-Born and Tung-song, and the one at Koh-Hong which is being expanded into a rubber research institute, have to be enabled to play a greater part in the rubber replanting programme, particularly in regard to seed production, research, and production of young rubber trees so that there will be no need to import them from abroad.

Past Performance and Outlook

55. Of central significance in the Plan is the fact that with four-fifths of the working population are engaged in agricultural pursuits, the country's most important economic activity for a long time to come will remain agriculture. Thailand's economic advancement and standard of living thus inevitably depend upon future developments in this sector. In respect of the implementation of the agricultural programme, it cannot be over-emphasized that the Ministry of Agriculture is not the only agency responsible for carrying out agricultural development activities. The development undertakings of other Ministries, for example, irrigation works, improvements in communications and community development projects, include with their aims increased agricultural output and better marketing services. A harmonization of inter-departmental programmes/projects is indispensable.

56. During the first three years of the Plan satisfactory progress was achieved in the fulfilment of many of the objectives. The rise in the production of important crops, such as rice, maize and tapioca, has been praiseworthy. The apparent decrease in the number of registered livestock, kept within bounds, should not cause undue concern in view of the emphasis in the Plan on quality rather than quantity. Fish-farming and sea-water fishing have made commendable progress. Generally speaking, important irrigation projects and programmes for research, experiment, and extension services have made good progress. Notwithstanding, there have been a number of obstacles and difficulties and the principal ones are discussed below, by major activity.

57. **Agricultural Research and Experimentation.** The Ministry of Agriculture has numerous agricultural stations all over the country under the administrative jurisdiction of various Departments. At present, these stations are not effectively discharging their assigned tasks mainly because of an acute shortage of competent technical officers and of equipment required to carry on research on a high level. Further, the coordination of the work of these agricultural stations is weak both because of the long distance between stations and the lack of central and unified administrative control. Technically qualified agricultural officers are given heavy administrative responsibilities and are therefore not available for research work. Moreover, the salary structure of the Thai Civil Service is not designed to attract highly qualified research officers, nor does the present administrative tradition encourage independence of thought or original thinking.

58. One approach to the solution of this problem is the planned establishment of regional agricultural centres which combine and integrate the work of small stations now under the jurisdiction of the various Department of the Ministry. Qualified scientists will be sent to work at these regional centres, which will be adequately equipped to handle the increased work programme. Furthermore, research institutes will be established for particular problems of especially crucial importance; these institutes will have regional branches. In addition, the establishment of a National Agricultural Research Institute is envisaged to conduct research at the highest level. Since the development of agriculture includes subjects dealt with by other Ministries, it is clearly necessary to lay down basic principles for coordinating the work of the various Ministries.

59. **Agricultural Extension Services.** Agricultural extension services are an indispensable chain in the process of agricultural development. The shortage of extension officers and their multiple non-technical responsibilities has resulted in performance below expectations. As stated earlier, it is now proposed to decentralize and establish zonal or regional agricultural extension service offices, and to provide necessary mobile facilities for reaching all the farmers in a given locality. The aim, to have at least one agricultural officer in each Amphur of the country, may admittedly prove difficult to achieve in the near future. Thailand's agricultural population, largely poor and poorly educated, makes it difficult for Government officials to reach every farmer. However, the community development programme of the Ministry of the Interior should help reach a larger number of the farm population and farmers groups can also be of assistance. It would seem appropriate if farmers groups were given

legal corporate status by means of an enabling Act so that they could become a truly effective channel of communication.

60. **Rubber Planters' Aid Fund.** The results obtained so far from rubber replanting programmes have been less than satisfactory. Various foreign rubber experts have recommended that Thailand should replace existing old rubber trees with better species in 10-20 years. To implement this recommendation within the specified time requires an accelerated rate of replanting. Although the Office of the Rubber Planters' Aid Fund has only recently started its operations, several formidable problems confront if for which solutions must be found. Overriding is the problem of the planters, small-holders, who comprise three-fourths of and who are unwilling or unable to carry out replanting because of insufficient Aid-Fund money to support them during the transitional period, until the new trees begin to have significant yields. A thorough study must be made of ways and means of solving this serious problem, including, for example, encouraging them to grow other crops and to breed livestock; promoting the establishment of small-planters' groups which would be able to obtain low interest loans in addition to the existing Aid-Funds; alloting new land to small planters and encouraging them to sell their existing small or fragmented holdings; establishing mobile replanting machine-units which will assist, at a nominal sum, the clearance of the existing trees; and so forth.

61. It may not be wholly desirable to allow foreign companies to establish and operate Rubber Estates, as in Malaysia. However, in certain cases, permisson may be given if justification exists. In addition, it will be necessary to have a modern and well-equipped rubber research institute.

62. **Extension of Important Crops.** Apart from various research and extention difficulties which have already been mentioned, there are other difficulties in the efforts to promote such important crops as beans, castor beans, jute and kenaf, and tapioca. These include high production costs, inadquate transportation facilities, and unstable markets. Kenaf has a special proplem of its own - - - lack of sufficient water for retting, which accounts for the poor quality. The production of sugar-cane is unfavourably affected by the high cost of sugar refining, and the Sugar Aid-Fund has been of little benefit to sugar-cane growers. Production of tobacco leaves is in excess of internal demand. While measures taken during the first three years of the Plan have helped, such as export promotion, price support for certain

products, and quality control and standardization, more needs to be done. Stubborn transportation and marketing problems remain and will have to be cooperatively solved by the Ministries concerned.

63. **Expansion of Improved Varieties of Rice.** This project has been in operation for a long time and could have been more successful had it thoroughly covered the whole rice-growing area of the country. So far, however, success has been rather limited. There are several problems, for example, the price of rice of improved variety is not higher than that of ordinary rice, the muliplication of the improved varieties has its own technical difficulties, and experiment and research on various varieties have not been carried out in every locality. One way of meeting some of these difficulties is to establish farmers groups, and to exert firm quality control on rice-mills, so that higher-quality rice will command higher market prices. Another way is to increase the number of experimental plots so that the right kind of improved rice can be found for each locality.

64. **Promotion of Fisheries.** A most crucial and immediate problem is the danger of extinction of fish in natural water. Natural breeding grounds are becoming more shallow and are destructively invaded by freelance and uninhibited fiishing. Fresh-water fishing has been carried to the point where the annual catch exceeds natural reproduction. To prohibit such over-exploitation is useless, since no means of enforcement exists, an to establish an effective control system would be too costly. Besides, in the development field, positive measures are always better than negative ones. Thus it will be necessary to find some positive means to cope with the problem, such as to improve fishing waters, to conserve large fish-breeding waters, Borapet lake, for example, and to expand the breeding of fish in dam reservoirs and water storages. Thailand has good breeding grounds for fresh-water fish, and these should be developed. Besides, fish-breeding in ponds and farms should also be encouraged.

65. As regards sea-water fishing, encouragement should be given to deep-sea fishing. At present, sea-fishing is done only in the coastal shelf, leading to excessive surface trawling.

66. **Livestock Development.** The development of animal husbandry has made good progress in some directions, for instance in respect of swine and poultry. However, in other directions, such as the breeding of buffaloes and cattle, progress has been slow both in the improvement of stock and animal nutrition. Thai farmers breed cattle and buffaloes for draft purposes, not for food; and in general this is quite appropriate to the prevailing farming conditions. However, scope exists for breeding

cattle for meat because of ready domestic and external markets. As regards draft cattle, the indigenous strains should be upgraded by selective breeding and experimental crossbreeding undertaken with foreign breeds, with a view to evolving a bigger dual-purposes type of animal.

67. Special difficulty is experienced in regard to animal nutrition, which is still a novelty to the Thai farmers. For example, maize is a very good animal food and is produced in abundance in Thailand, but is exported because little use is made of it in the country.

68. Still another problem, the Department of Livestock Development has hitherto mainly concentrated on veterinary work; animal husbandry has not been actively encouraged, and officials with the required experience are still lacking.

69. **Forest Conservation and Protection.** The future of Thai agriculture depends on the conservation of soil fertility and water resources. To conserve forests in the watershed areas is therefore of decisive importance. These watershed forests cover about one-fourth of the entire area of the country. Moreover, valuable timber and virgin forests, constituting important resources of the country, will have to be conserved. At present, Government's conservation efforts have met with no more than limited success, because of the difficulties in controlling illicit felling and logging, particularly of valuable timber, and in controlling shifting cultivation by the hill-tribes and by cultivators in general. The situation has improved considerably since the establishment of mobile forest protection units, and since the amendment of forest laws and regulations imposing more severe penalties. However, there is still considerable room for improvement in the enforcement of the laws. In the task of forest conservation, it is necessary to have the results of land classification surveys and mapping, so that areas which should be conserved can be specifically determined. In the surveys of some forest areas, such as those carried out for the Northeast, it was found that areas which can be classified as forests have greatly diminished. There is thus cause for real concern. The problem of the hill-tribes and the destructive practice of shifting cultivation must be solved, with more resolute determination than in the past. More amendments should also be made in the forest laws and regulations to make tighter control possible. On the administrative side, more funds should be allocated to the Department of Forestry to enable it to discharge effectively its important tasks. Lastly, the Forest Industry Organization should have wider responsibility to assist the Forest Department, for example in silviculture and forest products research.

70. **River-Basin Development.** The progress of construction of a number of irrigation projects has been highly satisfactory; but the problem of the best method of

utilizing the water still causes some concern, particularly in the areas served by water-storage reservoirs in the Northeast. The optimum utilization of the water requires close cooperation between the Royal Irrigation Department, Department of Land Development, and other Departments in the Ministry of Agriculture. Thus the development of river basins requires joint and cooperative efforts of the Departments concerned, and the implementation of projects during the first three years of the Plan proceeded on this basis. During the next three years, efforts will be concentrated on the development of the Chao Phraya River basin, so that maximum benefits can be reaped from the construction of the Phumipol Dam and the Chainat barrage. In this connection it will be necessary to improve and expand the agricultural stations, to increase the number of agricultural extension officers, expand the cooperatives, and to conserve and improve soil conditions in the Chao Phraya areas. As for the Northeast, only large reservoirs will be built. An important problem is the better utilization of the Land around these reservoirs, which it seems should be the responsibity of the Department of Land Development.

71. **Cooperatives.** The problems of the credit cooperatives were briefly touched upon earlier, as were Government measures to improve the situation. Credit cooperatives must be able to acquire sufficient finance to continue sound operations. Not only should they not lose money, but they should be able to finance the expansion of agricultural output, their most important goal. Like the credit cooperatives, the marketing cooperatives, which were founded subsequently, failed to achieve set objectives, severe losses were incurred, and they in no way succeeded in meeting the marketing needs of the farmers. On the other hand, the land cooperatives have had moderate success, though they remain weak in relation to the considerable demands made upon them, and in some cases, as in the Northeast, such weakness has led to stoppage of Land improvement work.

72. The strengthening of the cooperatives is essentially a long-term process, and immediate results cannot be expected. However, within the period of the Plan, several steps in new directions are being taken. Thus, a Cooperative Plan, involving the amalgamation of various small credit cooperatives into larger agricultural credit cooperatives with the purpose of financing production, and not consumption debts as in the past, should herald a new era for the Thai cooperative movement. Also, a beginning has been made in the establishment of multi-purpose cooperatives, with stricter control of loans. The expansion of land improvement cooperatives in the irrigated areas of the Central Plains now under way is expected to contribute significantly towards the revitalization of the entire cooperative movement.

73. **Administration.** In addition to the specific problems of individual projects and programmes, there are also two general administrative difficulties : firstly, the

division of responsibility and allocation of work among the Departments of the Ministry of Agriculture leaves much to be desired; secondly, coordination and cooperation with other Ministries is still highly imperfect. It is most essential to take measures to improve the situation, including reorganizing the Ministry.

74. To sum up, it may be said that the overall near-future prospects for Thai agriculture are reasonably promising. The rate of expansion of agricultural output is not expected to be less than three percent per annum; this will contribute significantly towards the growth of the national income. However, economic development planning must be concerned not only with the Plan period, but should also have a long term perspective beyond the period covered by the Plan, so that development projects take into consideration both existing conditions and also probable conditions in the more distant future. The following factors are of crucial importance for the future of Thai agriculture :-

a. Population will be increasing at a rather high rate with a consequent rapid increase in domestic consumption of farm products, particularly staple foods such as rice. Thus the internal market for agricultural products will expand. The ever-increasing demand for imported goods will necessitate increased exports to obtain foreign exchange for financing the imports and, for a long time to come, the agricultural sector will have to continue to carry a major share of the export burden. The implication of all this is clear : agricultural production must increase at a higher rate than the population increase.

b. There are two ways of increasing agricultural output. One is to expand the area under cultivation, the other is to increase yields per rai. It is still possible to bring more land under cultivation, but there are limitations. However, areas under cultivation could be expanded up to 120 million rai, or thirty percent of the entire land area of the country. Such expansion would mean bringing marginal land under cultivation, with consequential low yields per rai. Thus increase in yields is of vital importance, and is in fact the key to the development of agriculture. Farmers will be able to increase yields only with Government help and guidance. The Government will, therefore, adhere to the principle of supplying services through vraious projects : irrigation, proper utilization of fertilizers and water, the expansion of improved varieties of crops and livestock, and advancement in agricultural technology will all contribute towards higher yields. If the projects for agricultural development generally achieve the targets, the rate of increase of agricultural output should more than exceed the rate of population growth in the foreseeable future.

c. The traditionally important crops, such as rice and rubber, will decrease in importance relative to other crops. Rice output will, however, have to be increased in order to achieve a sufficient exportable surplus after meeting the rising internal demand. As is well known, the world population and in particular of Asia has been expanding at a very rapid rate, resulting in an increasing world demand for rice. Thus rice will remain the single most important crop of the Thai economy for years to come. With completion of irrigation projects and other agricultural programmes in future years and their full effects felt, Thailand should be able to grow rice on 50 million rai, of which 15 million rai are planned to be under effective irrigation. Rice production should reach a figure of some 12 million tons. As for rubber, replanting will be completed within the next ten years; there will also be an expansion in the area under rubber through new planting. Within the next twenty years, the area under rubber may be expected to increase to about 5 million rai and production to about 500,000 tons, and as a result of higher yields and other factors it should be possible to cut average costs of production sharply thus enabling the natural product to compete more successfully with artificial rubber in the world market. Other crops and fruits will gain increasing importance. This will, however, require greater diversification than at present. Tobacco, sugar-cane, cotton, fruit, and oil-seeds are all capable of great expansion. It is expected that the cultivation of the other crops will increase to 25 million rai and that of fruit to 15 million rai.

d. In animal husbandry, more emphasis will be placed upon better breeding in order to obtain better quality meat and other animal products. The number of work-animals, if present trends continue, will be slightly reduced. There will be animal-farms, including dairy farms in suitable locations. Foreign demand for pigs, ducks, chickens and eggs may be expected to increase. In the field of fisheries, fresh-water and salt-water fish farming will expand by at least twice the present capacity. Morover, emphasis will be placed upon deep-sea fishing, with more boats and modern equipment. No significant expansion in the output of forest products is anticipated, but it will be necessary, more than ever, to conserve watershed forests and valuable timber-bearing forests. Forest plantations for industrial purposes, such as paper pulp and other products, will also have to be developed.

e. The welfare of the average Thai farmer will improve, in part due to his own efforts, including farmer groups and cooperatives with which he will be associated, and in part because of Government programmes. In many areas he will be able to cultivate all the year round. He will be making more extensive use of farm machinery and available electric power. Government social services to the farmer, including health and education, willbe larger in scale and generally an improvement over the past.

75. The conclusion that the farm population of Thailand has a reasonably bright future will depend on the succcess of the Government's development efforts in various fields, as well as on the social development of the farm population. Economic and social progress are mutually interrelated and interdependent in agriculture in particular, it will not be possible to have one without the other.

Chapter 7

Industrial and Mineral Development

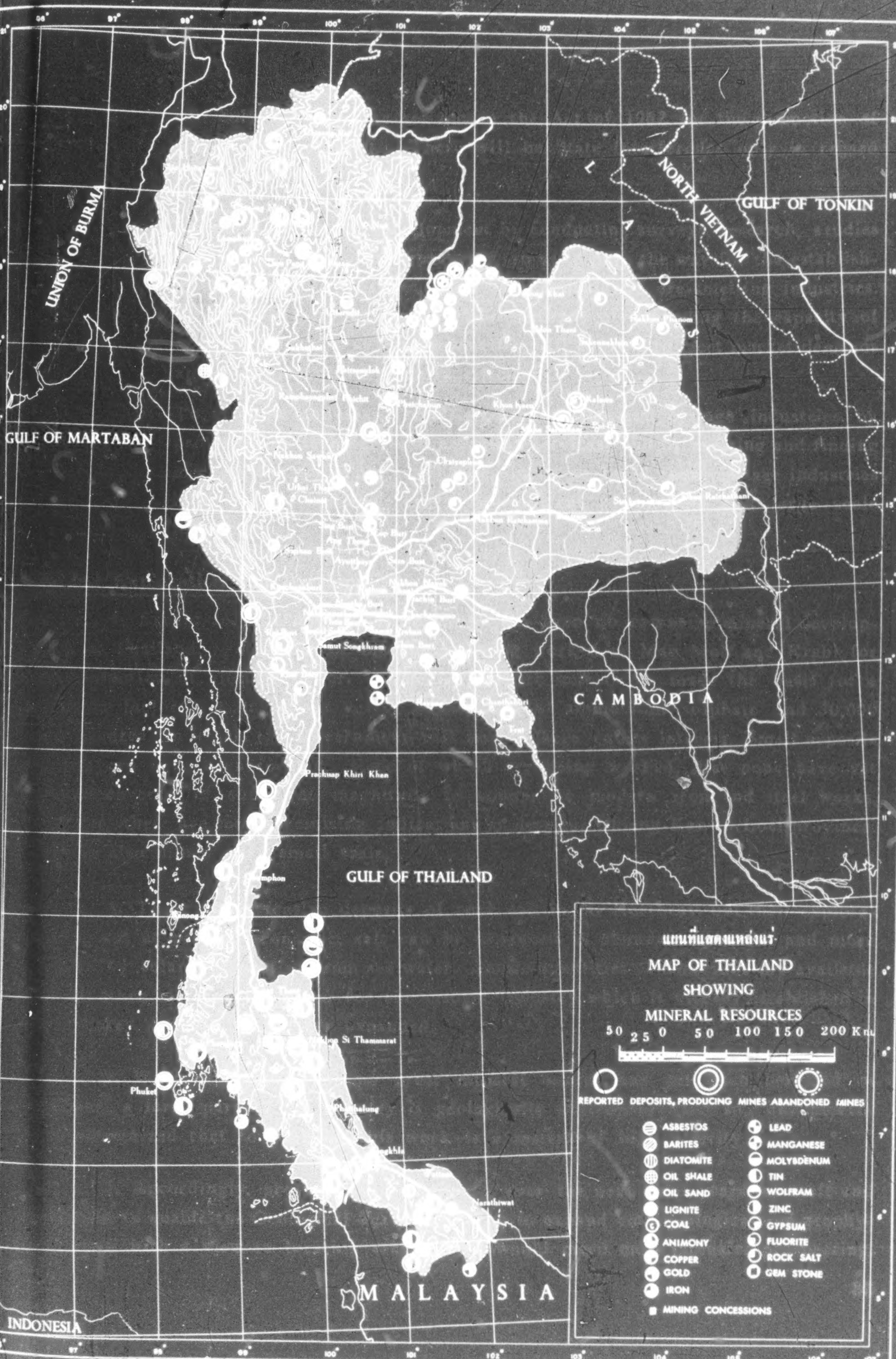
1. The industrial sector of the Thai economy, which comprises manufacturing, construction, mining and quarrying, now accounts for a fifth of the total production of the nation and, moreover, is expanding rapidly. Manufacturing alone is responsible for approximately 13 percent of the country's total output and provides direct employment to an estimated 3½ percent of the economically active population. The total number of industrial establishments is believed to approximate 28,000, but only a handful of them employ more than 50 employees, and most of these are concentrated in the Bangkok area. Industries ancillary to agriculture and forestry such as rice milling, saw milling, and flour milling, predominate.

2. The promotion of industrial expansion is a principal objective of the Plan. This is sought to be achieved mainly through private initiative. While funds have to be provided in suitable cases for modernization or expansion of Government's industrial enterprises that already exist, it is not intended to add to their number. The Government's main task is considered to be the creation of conditions conducive to investment in industry by private enterpreneurs, both domestic and foreign. It is, therefore, undertaking or promoting the survey and exploration of natural resources valuable to industry; it is endeavouring to provide the public utilities which industry requires, in particular, an assured supply of cheap power; it is offering certain forms of direct assistance and encouragement, including special assistance for the development of small-scale industries; and it is planning to expand and consolidate the facilities for scientific and industrial research.

Policies and Objectives

3. Policies and objectives in industrial development are as follows:-

(i) To encourage domestic and foreign enterprise to undertake more industrial activities in the country. The State will assist and promote industries of various scale to suit the needs of the domestic market. The State will not engage in activities competitive with private enterprise, and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MINERAL RESOURCES
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BARITES
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OIL SHALE
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COAL
ANIMONY
COPPER
GOLD
IRON
LEAD
MANGANESE
MOLYBDENUM
TIN
WOLFRAM
ZINC
GYPSUM
FLUORITE
ROCK SALT
GEM STONE
MINING CONCESSIONS
UNION OF BURMA
GULF OF MARTABAN
L A O S
NORTH VIETNAM
GULF OF TONKIN
CAMBODIA
GULF OF THAILAND
MALAYSIA
INDONESIA
Samut Songkhram
Prachuap Khiri Khan
Chumphon
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Nakhon Si Thammarat
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will follow the policy set out in the Act of 1962 for the promotion of industrial investment. There will be State interference only in regard quality control.

(ii) To assist industrial development by conducting surveys, research, studies and analysis of natural resources, so as to pave the way for the establishment of heavy industries, such as chemical and ore-smelting industries. Studies will also be made of the methods of expanding the capacity of existing industries so that production will be able to meet market demands and will also be technically efficient.

(iii) To promote and assist small-scale industries and cottage industries by provision of technical and extension services, and by creating and finding markets for their products. The aim is to build these cottage industries into a base for the future development of medium and large-scale industries.

Mineral Exploration and Development

4. Except for the mining of tin, there has been no extensive mineral development in Thailand. Deposits of lignite are being worked at Mae Moh and Krabi for the production of electric power. The former are now to be made the basis for a fertilizer factory, turning out yearly 60,000 tons of ammonium sulphate and 30,000 tons of urea, in which the Government will have a large equity interest. Small deposits of iron ore have been located, some of which are being worked, but none have yet been discovered of sufficient magnitude to support a modern iron and steel works. However, there are some promising indications at Amphur Chieng-Kan in Loei province. Lead is also mined on a small scale.

5. There are extensive deposits of rock salt in the Northeast but their exploration is not at present economic; salt can be produced in abundant quanties and more cheaply by solar evaporation from sea water. Ample quantities of limestone are available and of other materials required for the cement industry which is already established in the country and can be further expanded.

6. While it is true that no great mineral wealth has yet been revealed in Thailand, a large part of the country is geologically still unsurveyed and unexplored. It is recognized that to push on this work is a matter of high priority.

7. Accordingly, provision is being made over the next three years for staff and equipment to enable the Geological Survey Division to expand both geological and geophysical work with a view to locating areas which would merit more intensive prospecting.

8. It is also proposed to establish a second centre of mineral development at Yala in southern Thailand in addition to the existing one at Phuket. Not only will geologists and mining personnel be trained at this centre, but surveys and investigations will be carried out from it.

9. In addition, foreign aid has been obtained or is being requested for surveying or prospecting special areas and deposits and for training personnel. The more important of these programmes are:-

(i) A mineral survey, recently started, on both banks of the Mekong above Nongkai which is being carried out under the auspices of the Lower Mekong Development Committee and is financed by a grant from the UN Special Fund.

(ii) A survey of mineral resources in Northern Thailand for which assistance from West Germany has been requested.

(iii) A survey of mineral resources in the South for which foreign assistance is yet to be obtained.

(iv) Exploration of iron ore deposits at Kanchanaburi which has recently been completed with West German assistance. Further assistance may be requested for additional surveys.

(v) Establishment of a training school for miners in the South with West German assistance.

10. It may also be mentioned in this context that the Department of Land Development is engaged on an extensive drilling programme for the exploration of ground water resources in the Northeast and a large provision is being made for this in the next three years.

11. **Oil Exploration:** Several years ago, oil was discovered in the Mae Fang basin in the north of Thailand, but the flow was insufficient to feed even the small Government refinery established there. Further exploration is still going on. In this connection, a license was granted to a foreign firm to explore the certain areas in the North and Northeast. However, it is doubtful if any oil in commercial quantity will be discovered during the Plan period.

12. Apart from oil exploration, the Government has completed the construction of an oil refinery with a daily capacity of 5,000 barrels at Bang Chak. Another refinery of 28,000 barrel capacity is being established near Sriracha, Changwad Cholburi, by a private company and it is expected that it will be in production in 1964.

13. Tin Mining: It is anticipated that the output of tin will continue to increase steadily in the next few years and will reach 20,700 metric tons of concentrates by 1966. World production is lagging behind demand and the shortage is being only partly met by releases from the United States stockpile. This trend is likely to continue well into 1964 with the likelihood of prices climbing above the maximum price set for the Tin Buffer Stock. The immediate prospects for tin mining thus appear to be bright. An important new development will be the proposed establishment of a tin smelter in the South of Thailand. Mineral production in Thailand is expected to increase as shown below:-

Table 1

MINERAL OUTPUT, ACTUAL 1962, ESTIMATED 1964 - 1966

(In metric tons)

Item	1962	1964	1965	1966
1. Tin-in-concentrates	14,800	18,100	19,400	20,700
2. Lignite	195,000	360,000	400,000	440,000
3. Gypsum	21,000	31,000	32,000	33,000
4. Iron	45,000	8,000	15,000	25,000
5. Lead	5,500	6,000	9,000	10,000
6. Wolfram	200	200	200	200

Promotion of Industry

14. The Department of Industrial Promotion in the Ministry of Industry is engaged in training, research, and the provision of technical and marketing guidance mainly in connection with cottage and small-scale industries. Besides this Department there are two main institutions through which the Government seeks directly to encourage and assist industrial development: the Industrial Finance Corporation of Thailand and the Board of Investment.

15. **Department of Industrial Promotion:** The industrial promotion measures being carried out by this Department fall into 3 categories:-

a. Research and experimentation on domestic raw materials for industrial use, studies of different industrial processes, and experiments on modification and adaptation of labour-saving devices for local industry.

b. Promotion of local industries by means of technical guidance and assistance. This includes the collection and publication of statistics on industrial raw materials, data on manufacturers and other technical information, as well as conducting technical training courses.

c. Organizing publicity for local industrial products, certifying the quality of locally produced goods, stimulating quality improvement and furnishing marketing services.

16. Other agencies in the Ministry of Industry in cooperation with the Department of Industrial Promotion are also responsible for different aspects of industrial promotion, for example, the Department of Science which certifies domestic products in respect to quality and standards.

17. **Industrial Finance Corporation of Thailand:** This corporation was set up in 1960 with an authorised capital of 20 million baht of which 17.4 million have been paid up. The Government advanced to it a long-term, interest-free loan of 15 million baht, which was borrowed from the baht proceeds of sales of U.S. agricultural surplus commodities. The Corporation, however, did not immediately achieve as much as was expected of it. In the first 1½ years of its existence only 8 loans were made of an aggregate amount of 11.3 million baht, although the funds at its disposal exceeded 30 million baht. In 1962 the Corporation was reorganized. This led to considerable improvement and, with a rapid increase in the loans granted, the Corporation felt the need to obtain additional capital funds. The Government advanced a further loan of 20 million baht at a low rate of interest and negotiations have been completed to obtain loans of $2.5 million from the IBRD and the Kreditanstalt fur Wiederaufbau of West Germany. In addition, the IBRD's affiliate, the International Finance Corporation, will invest $300,000 in the equity. Thus fairly large additional funds are being secured.

18. **Board of Investment:** This is a vital instrument of industrial promotion. In its present form the Board was constituted under the revised Promotion of Industrial Investment Act. 1962, and is concerned with the grant of promotional privileges permitted under this Act. They include not only guarantees that the State will not nationalize any private industrial activity that has been granted promotional privileges or itself undertake any new enterprise in competition therewith, but also exemption

from import duties and business tax on machinery, component parts and accessories, reduction of import duties and business tax up to 5 years on raw materials of 100%, 50%, or 32 1/3% depending on the importance of the industry, exemption from income tax for 5 years, the right to bring in from abroad experts and skilled workers and, in the case of capital of foreign origin, the right to remit profits abroad and repatriation of capital. It is believed that these privileges and the provisions of the Act compare very favourably with the investment laws of other undeveloped countries.

19. The number of parties granted promotional privileges in the three years 1961-1963 is shown in the following table:-

Table 2

BOARD OF INVESTMENT PROMOTIONAL APPLICATIONS, 1961 - 1963

Item	1961	1962	1963 (Jan.-Sept.)
Number of applications received for promotional privileges	103	102	91
Number of applications approved	41	59	49

20. It must not, however, be supposed that all those who are granted promotional privileges proceed to establish their enterprise and to bring it successfully into production. An appreciable number do not materialize or prove to be lame ducks. Nevertheless, the Board is making a significant contribution to industrial development and achieving, at any rate in some measure, the purposes for which it was set up. There has been an appreciable improvement in the time taken for processing applications which has been reduced from over one year to 4 months in most cases. Endeavours will be made to strengthen the Board's staff so as not only to facilitate correct decisions, but also to give assistance and guidance to applicants in improving their projects. An overall reorganization of the Board is being contemplated. A high level committee has also been set up to consider, inter alia, whether in the case of industries which are now in a position to meet the domestic demand, import duties should be increased or there should be some restriction on imports.

21. Ancillary to the work of the Board of Investment is the Survey of Private Investment Opportunities carried out in 1962 by a firm of private consultants as part of the United States aid programme for Thailand. This survey indicated the most promising fields for industrial investment and has been followed up by feasibility studies and preparation of prospectuses for four selected industries: Electrical Appliances, Industrial Chemicals (soda ash and caustic soda), Water Pumps and Hand Tools. Investment surveys of a number of other industries are about to be undertaken with assistance from the United States.

22. Industrial Estate: One serious problem confronting industrialists is the high price of land in the Bangkok area. It has been thought that Government could assist private entrepreneurs in this matter, and in other ways also, by the establishment of an industrial estate in the environs of Bangkok designed for relatively large-scale industry. Such an estate would be provided with roads, power lines, water supply and other utilities and sites for factories would be made available on reasonable terms. It has now been agreed that a feasibility survey for the establishment of an industrial estate should be undertaken by an American company with Government bearing half the total survey cost estimated at around 4.2 million baht. Ten million baht has also been earmarked by the Cabinet for the development of an industrial estate.

Small-Scale Industries

23. It is recognized that some assistance is required to be given to small-scale industries, in which category falls by far the majority of Thailand's total industrial establishments. These small units are generally unable to obtain loans at reasonable rates of interest; their manufacturing processes and techniques need improvement; in many cases the factory space and the utilities available are insufficient, and there is a general lack of marketing facilities.

24. The financial needs of most of these units are not met by the IFCT, since it does not advance loans of less than 500,000 baht. It is now proposed, as an experimental measure, that Government should make funds available to certain Commercial Banks at 3% for advancing to small-scale industries at a rate of not more than 10%. A provision of 30 million baht has been made for this purpose in the revised plan.

25. An application has also been made to the UN Special Fund for help in setting up a Small-Scale Industries Service Institute designed to give comprehensive assistance to small-scale industries. It is proposed that the Institute should be located at Bangkok with branches later on at five regional centres. The Institute would provide technical extension services to small industries and handicrafts. It would carry out

surveys and prepare techno-economic reports on possible small industries and make these available to prospective entrepreneurs; it would draw up model schemes and lay outs for small factories, supply improved designs, especially for handicrafts, operate demonstration workshops and arrange for the supply of machinery on hire-purchase terms. Preparations are being made for the establishment of this Institute in anticipation of assistance from the UN Special Fund.

It is also envisaged that one or two industrial estates should be started specifically for small industries, but no financial provision has so far been made for this.

Investments in Industrial Enterprises

26. Reference has already been made to the proposed fertilizer factory, in which Government will have a 49% share, and to the oil refineries at Fang and Bang Chak which are state enterprises. Other important state industrial enterprises are concerned with cotton textiles, sugar, glass, paper, gunny bags, tobacco and preserved food.

(i) **Cotton Textiles:** The State owns three textile mills. One of these is at Bangkok and has 10,000 spindles and 314 looms. Approximately 26 million baht are proposed to be spent within the Plan period as a whole on the improvement of this factory, and a further 150 million baht is being spent on a new textile mill at Pitsanulok, which is at present under construction. On completion in about two years time its output is expected to be a little over 6 million metres of cloth per annum.

(ii) **Sugar:** Through the National Economic Development Corporation the State is interested in two sugar factories, one at Cholburi and the other at Suphanburi. The capacity of the former has recently been increased from 1,000 to 1,500 tons. No further expansion is contemplated.

(iii) **Glass:** The capacity of the glass factory which turns out ordinary glassware will be increased from 40 to 80 tons per day and will involve an investment of about 18 million baht. It is proposed in the next two years to embark on the manufacture of neutral glass. The proposed capital investment is 5 million baht and the estimated production 5 tons per day.

(iv) **Paper:** About 600 million baht have been invested on a paper factory at Bang Pa-in with a capacity of 40 tons per day. The factory is complete and in operation, but production up to capacity has not yet been achieved. There is another State paper factory of 10 ton per day capacity at Kanchanaburi.

(v) **Gunny Bags:** Since 1962 the factory run by the Ministry of Industries has been utilizing its own resources to expand production from 6 to 10 million bags per annum. Similarly, the Northeast Gunny Bag company, under the control of N.E.D.C.O., is using its own resources to raise daily production from 30,000 to 50,000 bags. Including the production of the Thai Jute Co. at Kaengkhoi, which is operated by the War Veteran's Organization under the control of the Ministry of Defense, the combined output exceeded 8.8 million bags in 1961 and is expected to reach 23 million bags in 1966

(vi) **Tobacco:** The Thai Tobacco Monopoly which has a monopoly for the manufacture of cigarettes in the country, has three manufacturing plants in operation and a fourth under construction. The considerable capital expenditure which is currently being incurred is mainly for the completion and equipment of this new factory. The Thai Tobacco Monopoly has been asked to draw up a long-term programme for improvement of tobacco cultivation and for the expansion and improvement of its plants, sales facilities, etc.

(vii) **Preserved Food Organization:** This organization is engaged in producing canned food suited to Thai taste A pilot plant was set up a few years ago at Bangken and a much larger plant at Ban-Pong with a capacity of 20 tons per day is now on the point of completion and production is expected shortly. The capital investment on this plant has been of the order of 130 million baht.

Industrial Research

27. Scientific and industrial research in Thailand is at present rather limited nor has it yet succeeded in attracting its proper share of ability of the highest order. The Department of Science within the Ministry of Industry is largely engaged in testing activities and the development of research has been hampered by lack of funds and staff. It is recognized, however, that with the prospect of increasing industrialization more adequate provision must be made for scientific and industrial research. The establishment of a Technological Research Institute, which will form part of the recently constituted Applied Scientific Research Corporation, is taking place wtih assistance from the UN Special Fund.

Industrial Statistics

28. There is at present a great lack of industrial statistics. In the case of many industries it is difficult to ascertain what is the existing capacity or the existing rate of production and this makes it very difficult to forecast the growth of industrial production. It is proposed, however, in the next two years to hold the first full-scale industrial census in Thailand. A preliminary survey, undertaken as a kind of pilot project to gain experience, has been carried out this year in the Bangkok-Thonburi area and the results are being tabulated.

Progress and Outook

29. During the first half of the Plan programmes of industrial and mineral development have progressed satisfactorily. With assistance from abroad mineral surveys have been carried out in the Northeast and in the South. The Federal Republic of Germany has been particurlarly helpful in the survey of iron ore deposits in Kanchanaburi province and assistance has been received from the UN in the survey of similar deposits in the province of Loei and in the expansion of the geological work of the Geological Survey Division. The mineral survey in the Northeast along with the accompanying ground-water exploration, has yielded information on rock-salt formations which will be most valuable for the future planning of chemical industries. The number of wells sunk in connection with the ground-water exploration has averaged 200-300 per annum.

As already mentioned, oil exploration has attracted foreign attention and a licence to explore for oil in an area in the Northeast has been granted to a foreign company.

30. In the field of industry, the Board of Investment has been dealing annually with about 100 applications for promotional privileges and the number seems likely to increase. The Department of Industrial Promotion has been organizing training classes with a view to promoting cottage and small-scale industries and with the establishment of the Small Industries Service Institute this type of work will be stepped up. As regards State indusrial enterprises, reference has already been made to the oil refinery at Bang Chak, the new textile mill at Pitsanulok, and the paper factory at Bang Pa-in which are the major new units set up in the past three years.

31. A serious problem encountered in promoting industrial development is the relatively small size of the internal market and the low purchasing power of the bulk of the consumers. Existing industries are mainly small-scale and cottage industries, serving only the internal market; nor can much be expected by way of exports at this stage. Unit cost of production is still rather high and the Government has, therefore, to protect home industries which in turn tends to contribute to the maintenance of high unit cost. There is no immediate escape from this dilemma. When, however, with a general rise in purchasing power a larger internal market develops with, censequently, a keener competition to supply it, this problem may be expected gradually to disappear.

32. There is considerable scope for future industrial development. Apart from the four industries specially studied by the firm of consultants, the major industries which offer considerable scope for expansion in Thailand are paper and paper board, cotton textiles, vegetable oil and rubber manufactures. Agriculturally the country should

be capable in due course of supplying the requisite raw matertials, and in the case of paper and cotton textiles the domestic market alone will for many years be sufficient to absorb all production.

In spite of the large area of the country which is under forest, there is at present an insufficient supply of pulping materials and the paper industry has made slow progress. With help from the UN Special Fund a paper pulp survey is about to be undertaken with a view to improving supplies and locating suitable areas for pulpwood plantations.

The cotton textile industry has many difficulties of its own and, in addition, depends at present almost entirely on imported cotton. This will be remedied in the coming years if the efforts which are being made to promote the cultivation of cotton in Thailand meet with success.

Oil seeds and nuts are already produced in considerable quantities in Thailand, but there is every prospect that production will greatly increase in the coming years, especially with the supply of irrigation water for dry-season crops. It should, therefore, be possible to establish an efficient vegetable oil industry in the country.

One large automobile tyre factory is in process of erection and the production of bicycle tyres has been undertaken on a small scale. Further expansion of rubber manufactures is feasible.

There is also scope for the manufacture of water pumps, agricultural implements, electrical equipment such as small motors, transformers, cables and wires, and household electric appliances. Many of these can be manufactured in small establishments and it is hoped that the assistance to be given to small-scale industries will promote the manufacture of such articles.

The establishment of a large scale iron and steel works is very much to be desired, but at present has to wait for further information regarding the availability of iron ore deposits. Meanwhile some small rolling mills based on locally available or imported scrap are already in operation and more and larger scrap-based rolling mills are coming into existence. Such enterprises receive high priority in the grant of promotional privileges.

Industrial Production

33. As already mentioned, except in the case of a few industries, there are no reliable figures of present or past production and, therefore, a forecast of the overall rate of industrial growth over the next few years would necessarily be speculative. However, a statement is given below showing in the case of a few major industries the estimated production in 1966 compared with that in 1962.

Table 3

INDUSTRIAL OUTPUT OF SELECTED INDUSTRIES

ACTUAL 1962 AND ESTIMATED 1966

Industries	Unit	1962	1966
Sugar	Ton	151,000	160,000
Automobile Assembly	Nos.	2,100	3,000
Glass	Ton	24,000	27,000
Paper	Ton	5,860	15,000
Cement	Ton	965,000	1,500,000
Chemical Fertilizer			
a) Ammonium Sulphate	Ton	-	60,000
b) Urea	Ton	-	30,000
Automobile Tyres	Nos.	-	140,000
Gunny Bags	Nos.	11,000,000	35,000,000
Cotton textiles	Sq. yards	109 million	190 million
Tobacco (cigarettes and cigars)	Nos.	10,500 million	14,000 million
Refined oil	Barrel	-	13.9 million

Expenditure

34. The expenditure proposed to be incurred on industrial and mineral development, including Central Government appropriations and disbursements of existing and prospective foreign loans and grants, is shown in the following table:-

Table 4

NATIONAL BUDGET DEVELOPMENT PLAN EXPENDITURES, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
Department of Geological Resources	35.92	44.60	45.70	126.22
1. Exploration and development of ground water	23.32	30.00	30.00	83.32
2. Mineral survey and Mineral Development Centre	5.07	4.60	5.70	15.37
3. Geological survey	7.53	10.00	10.00	27.53
Department of Industrial Promotion	14.98	20.87	26.21	62.08
1. Small Scale Industries Service Institute	4.05	9.87	15.21	29.13
2. Marketing service for Thai handicrafts	0.93	1.00	1.00	2.95
3. Loans for industrial purposes	10.00	10.00	10.00	30.00
Department of Industrial Factories	1.60	11.60	0.30	13.50
1. Productivity centre	0.30	0.30	0.30	0.90
2. Industrial estate	-	10.00	-	10.00
3. Paper pulp survey	1.30	1.30	-	2.60
Department of Science	0.80	0.90	1.00	2.70
Board of Investment	2.20	-	-	2.20
1. Industrial estate survey	2.20	-	-	2.20
National Research Council	-	6.50	7.81	14.31
1. Technological Research Institute	-	6.50	7.81	14.31
(Continued)				

Item	1964	1965	1966	Total
State Enterprises	91.21	98.09	45.21	234.51
1. Battery Organization	0.23	-	-	0.23
2. Processes Food organization	9.66	5.50	2.50	17.66
3. Tanning Organization	0.30	0.81	-	1.11
4. Textile Organization	11.00	37.56	15.71	64.27
5. Thai Paper Mill	0.50	0.50	0.50	1.50
6. Fang Oil Refinery	13.97	15.00	15.00	43.97
7. National Economic Development Corporation	27.02	15.22	4.00	46.24
8. Chemical Fertilizers Corporation	20.00	15.00	-	35.00
9. Pharmaceutical Factory	1.53	1.50	-	3.03
10. Tourist Organization of Thailand	7.00	7.00	7.50	21.50
Total	146.66	182.56	126.23	455.45

Table 5

FOREIGN LOANS DISBURSEMENTS, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total	Source of loan
IFCT	52.50	52.50	-	150.00	55 million baht from West Germany, and 50 million baht from IBRD
Textile Factory	98.50	26.00	-	124.50	Japan

Table 6

FOREIGN GRANTS, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
1. **United States**	2.00	3.00	3.00	8.00
a. Industrial Development				
2. **UNSF**	9.50	8.60	8.60	26.70
a. Technological Research Institute 1964				
b. Small Industries Service Institute				
3. **UN** (ILO)	1.70	1.70	1.70	5.10
a. Cottage industry				
b. Industrial labour force survey				
4. **Colombo Plan**	4.00	4.00	4.00	12.00
a. Industrial design centre (Japan)				
b. Others				
5. **Third Countries**	5.00	5.00	5.00	15.00
a. Mineral survey in the North				
b. Mining school (West Germany)				
c. Others				
Total	22.20	22.30	22.30	66.80

Table 7

ESTIMATED DEVELOPMENT EXPENDITURES, F.Y. 1964 - F.Y. 1966 *

(In millions of baht)

Item	1964	1965	1966	Total
1. Budget	146.66	182.56	126.23	455.45
2. Foreign loans	151.00	78.50	-	229.50
3. Foreign grants	22.20	22.30	22.30	66.80
Total	319.86	283.36	148.53	751.75

* These expenditures exclude 444.44 million baht of estimated spending on development activities by state enterprises out of their own resources. (See Chapter 13.)

Chapter 8

Development of Power

1. In the modern world an ample and assured supply of electric power at reasonable rates is one of the fundamental requirements of economic development. For some years after World War II Thailand suffered from a chronic power shortage, the expansion of both generation and distribution facilities lagging much behind the growth in demand. Furthermore, the large hydroelectric potential offered by the rivers and mountains of Thailand had remained practically untapped. Electric power was obtained almost exclusively from thermal and diesel plants operating at a comparatively high cost. Many of the latter were privately owned and had been installed to meet the needs individual establishments in the absence of a sufficiently reliable supply from public sources.

2. Before the commencement of the Six Year Development Plan (F.Y. 1961-1966) significant steps had been taken to remedy this situation by the initiation of a major hydro-electric project at Yanhee, and by the decision to construct a large new thermal station in Bangkok and to expand and modernize the distribution system. These projects, on which substantial expenditure has been incurred during the first three years of the development period, are just beginning to bear fruit and, as a result, an actual shortage of power is very unlikely to restrict commercial and industrial activity in the coming years. Nevertheless, the per capita consumption of power in Thailand is still very low and the objective of a wellcoordinated and technically efficient power system for the country as a whole has still to be achieved, though some progress is being made towards it.

Expenditure

3. The development of power during the Six Year Plan period will incur an expenditure in the magnitude of 4.1 billion baht. Well over 2.3 billion baht of this total was incurred during F.Y 1961-F.Y. 1963 according to available information and was financed principally through World Bank and other long-term loans supplied by the United States and other foreign governments. The various public enterprises operating in the power field contributed about 344 million baht from their own resources during the first half of the Plan period compared with 312 million baht provided by national Budget appropriations (not counting appropriations for foreign debt repayment and payment of customs duties and business taxes). Foreign governments also made available an estimated 169 million baht in grant assistance. Foreign loans, as shown below, will account for a smaller but still major share of the total financing of Thailand's power system during the second half period. Of the 963 million baht of anticipated loan disbursements, approximately a fourth represents expenditures of existing foreign loans.

Table I

POWER DEVELOPMENT PLANNED EXPENDITURES, F.Y. 1961 - F.Y. 1966

(In millions of baht)

Item	First Half				Second Half			
	1961	1962	1963	Total	1964	1965	1966	Total
1. Budget	97.13	59.01	155.81	311.95	198.36	264.45	103.25	566.06
a. National Energy Authority	3.23	9.71	29.01	41.95	70.20	134.30	66.00	270.50
(1) Electric power demand survey and plans	0.38	0.70	0.84	1.92	0.95	2.10	3.00	6.05
(2) Lower Mekong basin reconnaissance	1.95	1.60	1.48	5.03	1.38	1.70	1.80	4.88
(3) Nam Pong project	-	3.64	16.70	20.34	10.92	34.00	4.00	48.92
(4) Nam Pung project	-	-	4.66	4.66	42.62	52.00	-	94.62
(5) Pa Mong project	-	-	0.80	0.80	2.52	2.00	2.20	6.72
(6) Nakornsrithamrath electricity development	0.30	0.33	0.49	1.12	0.24	2.50	5.00	7.74
(7) Pattani River project	-	0.69	2.17	2.86	11.57	40.00	50.00	101.57
(8) Water power sources, survey and statistics	0.60	2.75	1.87	5.22	-	-	-	-
b. Public enterprises	160.90	80.27	219.76	460.93	128.16	130.15	37.25	295.56
(1) Yanhee Electricity Authority	98.50	41.10	67.84	207.44	28.00	-	-	28.00
(2) Metropolitan Electricity Authority	30.00	15.00	65.44	110.44	-	-	-	-
(3) Northeastern Electricity Authority	-	-	-	-	46.46	78.65	13.10	138.21
(4) Provincial Electricity Board	12.40	5.97	49.70	68.07	44.50	48.50	21.15	114.15
(5) Lignite Authority	20.00	18.20	36.78	74.98	9.20	3.00	3.00	15.20
c. Reserve	-	-	-	-	-	5.00	5.00	10.00
d. Minus appropriations for foreign debt and internal taxes	-67.00	-30.97	-92.96	-190.93	-	-	-	-

(Continued on next page)

Item	First Half				Second Half			
	1961	1962	1963	Total	1964	1965	1966	Total
2. Public enterprises own resources	130.79	91.62	121.71	344.12	113.46	69.00	61.90	244.36
3. Foreign loans	330.97	581.74	602.80	1,515.51	551.99	300.38	110.14	962.51
(1) Yanhee Electricity Authority	236.78	481.17	334.88	1,052.83	-	-	-	-
(2) Metropolitan Electricity Authority	94.19	73.12	100.80	268.11	82.77	-	-	82.77
(3) Lignite Authority	-	27.45	157.84	185.29	85.09	2.80	-	87.89
(4) Northeastern Electricity Authority								
Nam pong	-	-	9.28	9.28	89.31	88.26	23.18	200.75
(5) Distribution system (Yanhee, Northeast and South regions)	-	-	-	-	97.23	113.62	36.96	247.81
(6) Pattani project (Central Government)	-	-	-	-	-	60.00	50.00	110.00
4. Foreign grants	48.95	21.32	99.00	169.27	6.60	8.20	9.90	24.70
Total	607.87	755.95	977.52	2,341.34	870.41	642.03	285.19	1,797.63

Generation and Transmission

4. As will be seen from the table at the end of this chapter, the peak demand for electric power in 1962 was about 178,000 kw. and this is expected to rise to 311,000 kw. in 1966. It is estmated that the installed generating capacity in that year will be about 526,000 kw. This ample margin of capacity points to the need to encourage the growth of demand, especially for productive purposes, by increased efficiency and adjustment of rates.

The table below shows the composition of the estimated generating capacity.

Table 2

ESTIMATED GENERATING CAPACITY, F.Y. 1963 - F.Y. 1966

(Thousand KW.)

Fiscal year	Hydro - electric	Thermal	Diesel	Total capacity
1963	-	203.8	130.0	333.8
1964	140.0	243.8	60.0	443.8
1965	235.0	243.8	79.0	557.8
1966	241.3	243.8	83.0	568.1

Hydro-electric power. This will be mainly supplied by the Yanhee project the first stage of which is on the point of completion. This includes the dam and reservoir, two 70,000 kw. generators, and transmission lines to Bangkok. A third generator will be installed in 1964, dringing the total capacity to 210,000 kw. The ultimate capacity when all eight generators have been installed will be 560,000 kw.

Two other small hydroelectric projects, both in the Northeast, the Nam Pong and the Nam Pung, will have a capacity of 25,000 kw. and 6,300 kw. respectively. Construction is due to start in F.Y. 1964 and both power plants are expected to be commissioned by F.Y. 1965.

Thermal power. The principal thermal plant is the new power station at Bangkruoy near Bangkok which is due to be brought to its full capacity of 150,000 kw. in F.Y. 1964. It will be linked up with the Yanhee system.

Another new thermal plant based on lignite at Krabi in the Southern region with a capacity of 40,000 kw. is expected to be commissioned during F.Y. 1964. The power station is almost complete, but the transmission lines and distribution system are still to be installed.

The existing 12,500 kw. thermal plant at Mae Moh, also based on lignite, supplied power for the construction of the Yanhee project. It will continue as a standby plant when power from Yanhee becomes available.

Two existing thermal plants at Wat Lieb and Sam Sen in the Bangkok area with a combined capacity of 41,300 kw. will be closed down and kept as stand-by in F.Y. 1964.

Diesel-electric power. No new diesel generating units will be installed, but antiquated ones will be replaced by units withdrawn from areas that fall within the reach of power from Yanhee. Some units in these areas will be retained as stand-byes until regular transmission of power from the Yanhee system is fully assured. But in small towns and districts where the demand for electricity is too small to justify the expense of retaining reserve installations, the diesel generating units will be moved to places where power will not be available from central sources.

The table below shows the diesel generating capacity expected to be replaced by hydroelectric power and the capacity expected to be utilized elsewhere.

Table 3

REPLACEMENT OF DIESEL-ELECTRIC UNITS BY
HYDRO-ELECTRIC POWER, F.Y. 1963 - F.Y. 1966
(Thousand KW)

Item	1963	1964	1965	1966	Remarks
1. Diesel capacity in use at the beginning of each year	130	130	60	79	No change in the number of Diesel-electric units in use is expected in the first two years.

(Continued on next page)

Item	1963	1964	1965	1966	Remarks
2. Diesel capacity to be withdrawn each year on replacement by hydro-electric power	-	70	11	26	The area covered by the Yanhee transmission system is expected to be enlarged by one province per year, enabling a number of diesel generating units to be withdrawn.
3. Diesel capacity remaining	130	60	49	53	
4. Diesel units to be recommissioned outside the area of the Yanhee project	-	-	30	30	In accordance with the estimated demand of provinces outside the project area.
5. Diesel capacity in use at the end of the year	130	60	79	83	

Distribution

5. At present the Metropolitan Electricity Authority is responsible for distribution in Bangkok and its environs and the Provincial Electricity Authority in the rest of the country. Both these Authorities have to adapt their systems so as to be able to accept high tension current from Yanhee, reduce the voltage and then carry it to consumers. In addition, their systems require to be expanded and modernized.

The Provincial Electricity Authority has also to make provision for the distribution of power from the new thermal station at Krabi and from the new hydro-electric station at the Nam Pong and Nam Pung dams. The expansion of the distribution system to be undertaken by this Authority will cover:-

36 provinces in the Yanhee area
8 „ „ „ Krabi area
8 „ „ „ Northeast area

Surveys and Investigations

6. Surveys and investigations will be undertaken of possible sites for further hydro-electric stations, particularly in the Southern region which cannot be served from Yanhee. One project which will receive special attention is the Pattani river development project now awaiting a comprehensive survey of benefit and costs.

Provision is also made for Thailand's share of the cost of investigations of the Mekong river basin and Pa Mong dam which are being conducted under the auspices of the United Nations with financial assistance from a number of countries.

Forecast surveys will be carried out of the demand for electricity in different parts of the country. There is also provision for more adequate inspection of safety systems and for testing electrical equipment.

Some Problems of the Power Development Programme

7. As already poined out, over the next few years the supply of electric power is likely to run well ahead of the growth of demand for it. This has certain advantages. But these advantages will be more than offset if demand proves to be sluggish and if, in consequence, the large amount of capital which has been and is being invested in power development remains for a long period partially unutilized. Both from a narrow financial angle and from the broader point of view of the economic development of the country, it is very desirable that full benefit should be draw from the assets which have been created in the shortest time possible. This can be achieved if these assets are operated with the maximum efficiency so as to permit the introduction of a rate structure best calculated to stimulate overall demand.

Adjustment of rate structure. Until recently the power rates prevailing in Bangkok for industrial consumers were in excess of the cost at which industrialists could obtain electricity from their own privately installed units. It is recognized that there will have to be readjustments in the rates fixed for industrial and other bulk consumers, if the Yanhee power is to be fully utilized and industrial development promoted. In the provincial areas the general level of rates is much higher than in Bangkok and should admit of considerable reduction when Yanhee power becomes available.

A Committee is studying the rate structures of the Yanhee area and its recommendations are expected shortly.

Administrative reforms. There are at present no less than six semiautonomous Authorities concerned with the planning, generation and distribution of electric power. This multiplicity of separate agencies not only inflates overhead expenses but results in imperfect coordination and lack of uniformity in regard to standards, procedures, equipment and technical practices. Here again a Committee has been sitting to formulate proposals for rationalizing and streamlining the several organizations and standardizing procedures. A Swedish consultant firm has been hired to make a thorough investigation. No final decisions have yet been taken.

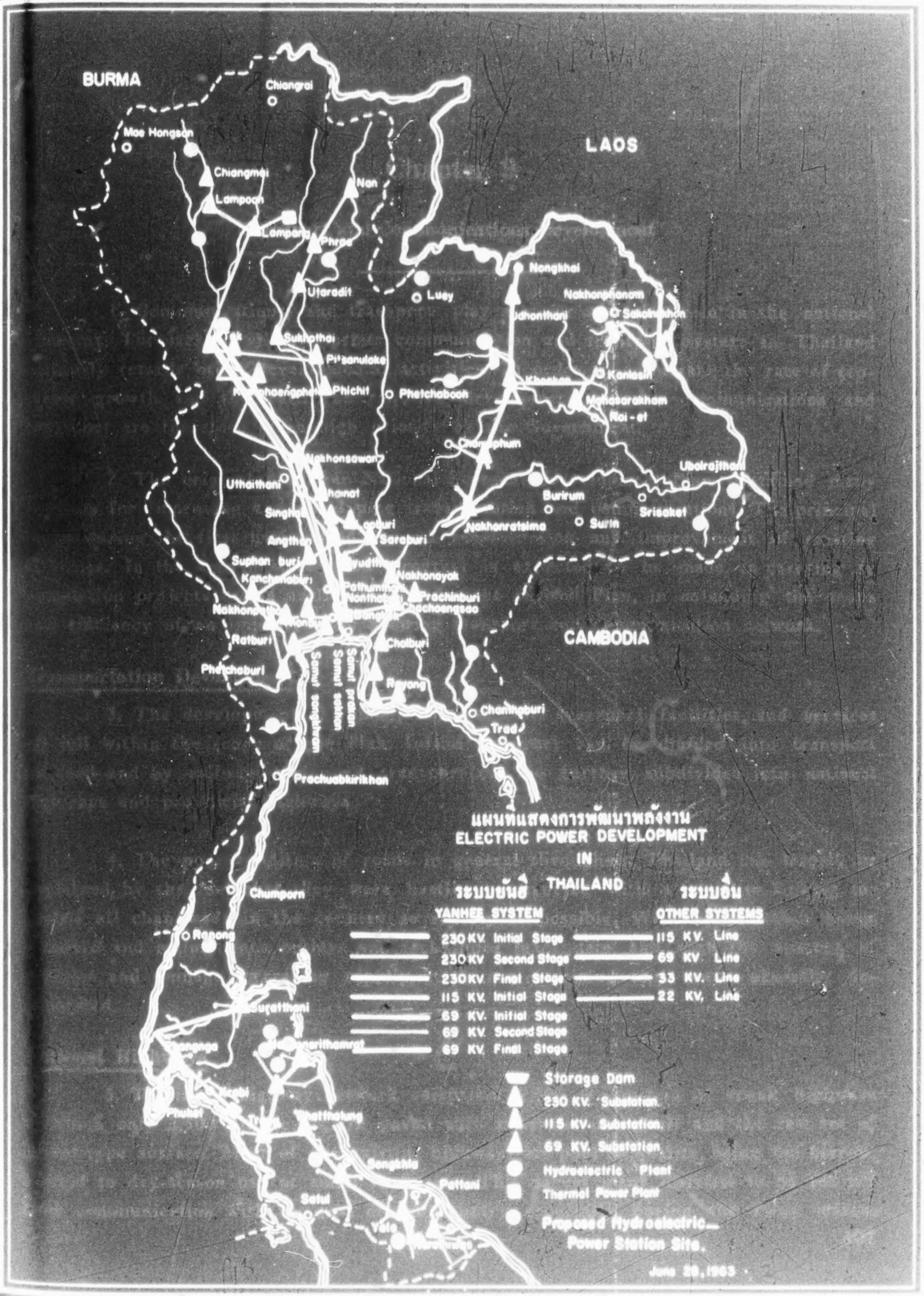
Table 4

DEMAND FOR ELECTRICITY, F.Y. 1961 - F.Y. 1966

Item	Actual		Estimated			
	1961	1962	1963	1964	1965	1966
A. Energy sales (1,000 kwh)						
Bangkok and Thonburi	343,840	403,990	474,680	557,750	655,360	770,090
Central region	45,700	53,700	63,100	74,142	87,110	102,350
Northern ,,	45,300	53,230	62,550	73,500	86,360	101,470
Northeastern ,,	14.900	17,510	20,570	24,170	28,400	33,370
Southern ,,	16,800	19,750	23,210	27,270	32,040	37,650
Total	466,540	548,180	644,110	756,830	889,270	1,044,890
B. Energy generated (1,000 kwh)						
Bangkok and Thonburi	450,960	529,860	622,850	725,300	844,960	984,380
Central region	59,940	70,430	82,752	96,410	112,320	130,850

Item	Actual		Estimanted			
	1961	1962	1963	1964.	1995	1966
Northern region	59,410	69,810	82,030	95,560	111,330	129,700
Northeastern ,,	19,540	22,960	26,980	31,430	36,620	42,660
Southern ,,	22,030	25,890	30,420	35,440	41,290	48,100
Total	611,880	718,950	844,760	984,140	1,146,520	1,335,690
C. Peak demand for electrical power (1,000kw)						
Bangkok and Thonburi	102.99	118.44	136.21	156.63	180.13	207.15
Central region	19.37	22.28	25.62	29.46	33.88	38.96
Northern ,,	19.21	22.09	25.41	29.22	33.60	38.64
Northeastern ,,	6.02	6.92	7.96	9.16	10.53	12.11
Southern ,,	7.08	8.14	9.36	10.77	12.38	14.24
Total	154.67	177.87	204.56	235.24	207.52	311.10

Source : National Energy Authority annual data.


BURMA
LAOS
CAMBODIA
Chiangrai
Mae Hongson
Chiangmai
Lampoon
Lampang
Nan
Phrae
Utaradit
Luey
Nongkhai
Nakhonphanom
Udhonthani
Sakolnakhon
Tak
Sukhothai
Pi'sanuloke
Kamphaengphet
Phichit
Phetchaboon
Khonkan
Kalasin
Mahasarakham
Roi-et
Chaiyaphum
Nakhonsawan
Uthaithani
Chainat
Singburi
Lopburi
Saraburi
Angthong
Suphan buri
Ayudthaya
Nakhonratsima
Burirum
Surin
Srisaket
Ubolrajthani
Kanchanaburi
Nakhonpathom
Pathumthani
Nonthaburi
Bangkok
Nakhonayok
Prachinburi
Chachoengsao
Thonburi
Ratburi
Samut prakan
Samut sakhon
Samut songkhram
Cholburi
Phetchaburi
Rayong
Chanthaburi
Trad
Prachuabkirikhan
Chumporn
Ranong
Suratthani
Phangnga
Nakhonsrithamrat
Krabi
Phuket
Trang
Phatthalung
Songkhla
Pattani
Satul
Yala
Narathiwat
แผนที่แสดงการพัฒนาพลังงาน
ELECTRIC POWER DEVELOPMENT
IN
THAILAND
ระบบยันฮี
YANHEE SYSTEM
230 KV. Initial Stage
230 KV. Second Stage
230 KV. Final Stage
115 KV. Initial Stage
69 KV. Initial Stage
69 KV. Second Stage
69 KV. Final Stage
ระบบอื่น
OTHER SYSTEMS
115 KV. Line
69 KV. Line
33 KV. Line
22 KV. Line
Storage Dam
230 KV. Substation.
115 KV. Substation.
69 KV. Substation.
Hydroelectric Plant
Thermal Power Plant
Proposed Hydroelectric Power Station Site.
June 28, 1963

Chapter 9

Transport and Communications Development

1. Communications, and transport play a major and vital role in the national economy. The lack of an appropriate communication and transport system in Thailand seriously retards other developmental activities. In order to accelerate the rate of economic growth and to reach the required development targets, communications and transport are therefore given high priority by the Government.

2. The original Six Year National Economic Development Plan contained many projects for improving and developing transportation and communications. The principal focus during the first half period was on rehabilitation and improvement of existing facilities. In the second stage good progress is expected to be made in carrying to completion projects begun earlier and, under the revised Plan, in extending the scope and efficiency of an improved and growing transport and communication network.

Transportation Development

3. The development of inland, water and air transport facilities and services all fall within the scope of the Plan. Inland transport can be divided into transport by road and by railway, and road transport can be further subdivided into national highways and provincial highways.

4. The poor condition of roads in general throughout Thailand can largely be explained by the fact that they were hastily constructed with a view to linking together all changwads in the country as rapidly as possible. With construction below standard and maintenance outlays and techniques inadequate, and with the number of vehicles and tonnage increasing rapidly, it is not suprising that roads generally deteriorated.

National Highways

5. Thailand's highway network comprises 9,000 kilometres of trunk highways of which only 2,500 kilometres are paved with concrete or asphalt and the rest are of gravel-type surface. Most of the existing highways are poor in quality, being too narrow, limited to dry-season use or small loads, etc. This causes many districts to be cut off from communication with the rest of the country, especially during the rainy season.

6. The original Six Year Plan for national highway development proposed to rehabilitate 6,100 km of low quality highways and also to construct 720 km of new roads. Most of the funds for this purpose were to come from the national Budget and it was expected that only 3 highways would require foreign loan assistance. Unfortunately, the estimated costs turned out to be too high for the Budget to finance during a six-year period and, moreover, the Government had insufficient mechanical equipment and trained engineers and other technical staff. A more feasible plan for highway development extending the completion period to 8 years (1963-1970) was drawn up and approved in July 1962. Under this revised plan the Government will rehabilitate and improve substandard highways as well as construct new highways for a total distance of 5,440 km. During the second half of the Six Year Plan, further revisions in the 8-year highway plan are envisaged reflecting relative priorities and modifications in standards and construction schedules, so that the overall highway programme will be more harmoniously integrated with the Six Year Plan itself. Emphasis during this period is on improvements to upgrade the standards, widen pavement widths and increase the wheel-load capacity so that the highways can be used throughout the year with relative savings in maintenance costs. It is hoped that funds will be available to construct the necessary highway links for connecting all the changwads in the country.

Provincial Highways

7. The provincial highway system comprises about 5,800 km of which 3,660 km is under construction. Until mid-1963 each province was entrusted with the responsibility for the construction and maintenance of its own provincial roads. Moreover, it was the responsibility of the Ministry of Interior's Public Works Department to provide technical assistance. The Central Government annually appropriated maintenance funds. Most of the existing provincial roads are at present below standard, have deteriorated, are barely passable, or cannot be used during the rainy season. The gaps in the provincial road system and the poor condition of existing roads is attributed not only to the lack of adequate funds for construction and maintenance but to an insufficient supply of trained personnel and equipment and machinery. Important, too, has been the absence of sound advance planning and programming to establish proper work schedules coordinated with realistic financing schemes. In mid-1963, in order to achieve more efficient operations, the Department of Highways was assigned the responsibility for all the provincial highways and various technical personel were transferred to it from the Ministry of Interior.

8. A six-year provincial highway plan, beginning in 1965, is being drafted which will be in harmony with the eight-year national highway plan. The emphasis during the first stage will be on engineering surveys and studies of the economic, social and administrative aspects to determine the relative priorities of the roads and

their proper standards depending on location and other factors. Provincial roads whose priorities have previously been established will be improved for yearround use.

Railway Transport

9. From the start the Government's railway development programme (1961-1966) has concentrated on increasing the carrying capacity and efficiency of the State Railway system rather than on substantial extensions of the existing network. Construction of the Nong Pladuk-Supanburi line has been completed and the Kaeng Khoi-Buayai line (the Korat by-pass) will be finished by the end of 1966, increasing the country's total railway track to 3,760 km. The only other major construction project, the Paholyodhin freight yard junction, will also be completed by 1966. Although consideration has been given to easing Bangkok's traffic congestion by transferring the present passenger terminal in the downtown area to the Paholyodhin yard at the outskirts of the City, the revised Plan proposes no investment for this purpose.

10. To improve the existing facilities the State Railway of Thailand has for the past few years been shifting from steam to diesel, procuring new passenger and freight cars, replacing 50-pound rail by 70-pound rail, wooden sleepers by concrete sleepers, wooden bridges by steel or concrete bridges capable of carrying 15-ton axle loads, and improving station yards, railway junctions, signal systems, etc. To facilitate the training of railway staff a training centre is being constructed at Bangsue. These programmes are being continued in 1964-1966. Among the specific targets are the procurement of 1,005 freight cars, bringing the total to 8,185; the replacement of 183 railway bridges; and the replacement by concrete sleepers of 317,300 wooden ones. The Six Year Plan also provides for the introduction of express diesel passenger service within a 200-kilometre radius of Bangkok.

11. It is estimated by the State Railway of Thailand that 1964-1966 will see average increases of 3 percent per annum in passenger traffic and of 4 percent annum in carload freight traffic transported by its equipment.

12. The railway investment programme for 1964-1966 envisages expenditure of 418 million baht funds in National Budget allocations and 539 million baht in foreign loans, as well as several hundred million baht of other domestic resources available to the State Railway.

13. Inadequate planning in the past has delayed the completion of railway construction projects and tied up Budget appropriated funds at the expense of the country's overall economic development. Moreover, the State Railway's cost accounting system has given rise to difficulties in making annual Budget appropriations. These and other problems are being overcome with improvements in administration and operation.

Public Trucking

14. The Express Transport Organization, a Government owned enterprise, has a trucking monopoly in the area of railway stations in certain provinces and in the Klong Toi Port area. It has a concession to operate three bus routes in Bangkok and Thonburi and other monopoly privileges. Its trucking operations in Bangkok-Thonburi area have been generally satisfactory, and collection of fees from other public freight truckers participating on the Paholyodhin and Klong Toi area under contract with E.T.O. in these activities has contributed substantially to its profits. On the other hand, its operations in provincial areas have been unsatisfactory and the E.T.O. operations as a whole have been at a loss.

15. The E.T.O. also has a concession to operate an inland waterway service at Swasdi Port in Bangkok which, incidentally, it has been able to operate at a profit.

16. A number of factors have contributed to the overall poor showing of this state enterprise : (a) past indebtedness imposed a heavy debt service; (b) improper accounting practices led to ineffective control of funds; (c) overstaffing for exceeded personnel requirements; (d) maintenance and repair costs for the trucking fleet were excessive in the absence of a sound truck replacement programme. Recent measures to put the E.T.O. on a more profitable basis include the dissolution of some of its units and the adoption of a more adequate truck replacement programme. Under a proposed reorganization scheme, the Metropolitan Bus Company will operate a bus monopoly in the Bangkok-Thonburi area with the possibility that the E.T.O. may hold shares in this company and no longer operate its three bus routes.

17. Under the truck replacement programme, 30-40 new trucks will be purchased each year; Budget appropriations during 1964-1966 in support thereof are estimated at 13.5 million baht.

Water Transportation

18. Inland water transport plays a vital part in the national economy. It is estimated that about 80 percent of all the rice transported within the central region of the country is by inland water. For those living in the Southern region, coastal shipping plays a major role with roughly 75 percent of all goods transported by means of vessels. The Government is therefore giving high priority to the development of inland water transport facilities and to the development of southern coastal ports, especially in the second stage of the Plan.

19. In the field of foreign trade almost all transportation is by sea. The development programme provides for improvements in the Port of Bangkok, but with the Port traffic heavy and expanding, attention is also being given to locating the most suitable place for the construction of a second deep water port. The programme for improving and expanding Thailand's water transportation system embraces projects of the Harbour Department of the Ministry of Communications and of the Government-owned Port Authority. Two projects, previously undertaken by the latter, are a dredging operation and a silt precipitation survey at the mouth of the Chao Phraya River. The dredging project, to facilitate the entrance into Bangkok Port of ocean-going cargo vessels up to 10,000 tons, has been a costly operation conducted by a foreign company utilizing Port Authority dredging and other equipment. To reduce costs and train Thai personnel the Port Authority is contemplating doing the dredging work itself with assistance from foreign technicians. The survey of silt precipitation at Chao Phraya River delta, a United Nations Special Fund project, was started in 1960 and will be completed in 1965.

20. Additional port projects during the second half of the Six Year Plan are:

(a) Dredging of navigable channels at Pattani, Kantang, Songkla, Phuket, and Narathivas;

(b) Construction of dolphins at mid-stream near the Port of Bangkok; and

(c) Final engineering survey of Sriracha port, with construction to begin in 1967.

21. A new project started in 1963 by the Harbour Department, and to be continued through 1966, is a survey of river traffic including studies of the volume, origin and destination of passengers and cargo, and of related aspects essential for a proper assessment of the importance and present and future requirements of the country's inland water transport system.

Air Transportation

22. The revised Six Year Plan contains a number of projects designed to continue improving and expanding Thailand's civil aviation network and facilities and to advance the country's position in international aviation, particularly as a major air junction in the Far East. To meet the requirements for safe, efficient, and more extensive domestic air service, the Department of Civil Aviation is improving aeronautical communication, air-traffic control facilities and aerodromes. It has embarked on a programme for developing provincial airports for use in all-weather conditions. It is building additional hangars and purchasing more ground equipment for efficient and

comprehensive overhaul and maintenance services. To reduce air traffic congestion at Don Muang Airport, it has designed and will construct an eastern runway capable of carrying loads up to 16,500 pounds per wheel. It is planning the construction of a second commercial airport in Bangkok. A site will be surveyed, land will be purchased, and preliminary engineering will be undertaken. The survey will consider, in addition, the future position of the Don Muang airport. The Thai Airways Company, a Government enterprise, plans to purchase three new (Avro 748) commercial aircraft, each having a 40-seat passenger capacity.

23. Emphasis during 1961-1965 was principally on airport construction and installation of improved air traffic control systems. Surveys and construction work were done at the following airports: Chiengmai, Korat, Udornthani, Ubol, Phuket, Phitsanuloke, Lampang, Chiengrai, and Nakhornphanom. Surveys and designs were prepared for airports at Songkla, Mae-sarieng and Maehongson. At Bang Ping, air traffic control towers, a VOR station, and a receiver station were erected; at Bang Pla a transmitter station was installed. In other provincial areas, a communication center for both domestic and international service was set up and two additional teletype machines were installed. These activities were accomplished by foreign firms under contract with the Thai Government and while no serious problems were encountered, some projects were delayed for lack of sufficient Budget funds.

24. The 1964-1966 programme is expected to require Budget outlays of 277 million baht to the Department of Civil Aviation, the projected second commercial airport accounting for 145 million baht of this total, mainly for land purchase. The project however, may be postponed pending a thorough survey. The eastern runway at Don Muang will be completed in 1965 at an estimated cost of 47 million baht. A new runway will be constructed at Songkla along with three runways in other provinces. Construction of two additional civil aerodromes will be undertaken. The aviation overhaul and maintenance facility of the Thai Airways Company will be expanded by the end of 1966 to a capacity of 60,000 man-hours, or three times its capacity in 1963. Improvements in air communications for both domestic and international flight information and traffic control, including establishment of radio stations and communication centres, as well as the introduction of telex services between Bangkok and provincial aeronautical stations are important parts of the programme.

25. These and other improvements will further the growth of domestic air transportation. Expectations are that the number of freight-ton kilometres will increase 6 percent per annum in 1964 and 1965 and 7 percent in 1966, while the annual increase in the number of passenger-kilometres will be 1½ percent and 2 percent, respectively.

Communication Development

26. The development of communications embraces post and telegraph services telephone services, radio, telex and telecommunications. The development activities undertaken during 1961-1963 were directed towards improving and increasing the efficiency of the existing communication systems. To achieve more rapid and efficient postal delivery, Bangkok was divided into 12 postal zones with a delivery centre in each zone. The Post and Telegraph Department assumed direct operational responsibility for thirty-five of the post offices in the provincial areas which had been operated by amphur or district personnel, railway stations, and private (leased) postal agencies. Telephone works in the provincial areas were incorporated into the Telephone Organization of Thailand, a public enterprise. Sixteen telephone centers were installed in the provincial areas, of which 9 were automatic systems, and additional telephone centres were installed in the Bangkok - Thonburi area. A major telecommunication system was introduced to step up the communication efficiency of the country. A micro-wave system in the Central and Northeastern regions was constructed and telex-services between Bangkok and Japan and Bangkok Manila were inaugurated as part of the programme to achieve domestic and international telecommunication facilities adequate for present and foreseeable future needs.

27. The shortage of trained personnel, lack of coordination, and other administrative problems have retarded the implementation of the development projects in this field. To keep pace with the increasing demand for qualified and trained staff, additional personnel have been recruited and training programmes have been launched in the component areas, but it will take several more years before the shortages are fully met. In the post and telegraph field, for instance, despite extensive recruiting and training efforts preparatory to replacement of non-Department personnel at rural post offices, the Post and Telegraph Department is still unable to meet personnel requirements. It is estimated, moreover, that even in 1966 about 800 post offices may still have to be operated under the auspices of other agencies and private licensed offices. The Post and Telegraph Department in 1963 launched a more extensive training programme than hitherto in an effort to fill its personnel needs more readily. Other communication projects are also short of trained personnel and as the Government completes the construction and installation of new facilities the shortages will become increasingly acute. To help meet this problem, a national telecommunication training centre has been established which offers courses in the fields of telecommunications, telegraphy, and telephone and telex communications. Participation by the Telephone Organization of Thailand and the Post and Telegraph Department in these training programmes should alleviate the problem of shortages of trained staff in these organizations.

28. Certain communication projects have suffered from overlapping functions and other duplication as illustrated by the servicing of telex both by the Telegraph Engineering and Radio Engineering Divisions, each using different teletype machines thereby causing discrepancies between domestic and external telex systems. The service work should be the responsibility of one agency and would lead to greater efficiency and less waste of time. In other cases, the operation of some projects is under the supervision of more than one agency causing unnecessary delays. For instance, the operations of the first three telecommunication zones must be approved by the Government's telecommunication committee and USOM. It is believed that the establishment of a national telecommunication organization as a separate agency, which is under consideration, would eliminate many of these problems.

29. A more detailed description of existing and projected development activities in communications is presented below in summary form for each of the major divisions:-

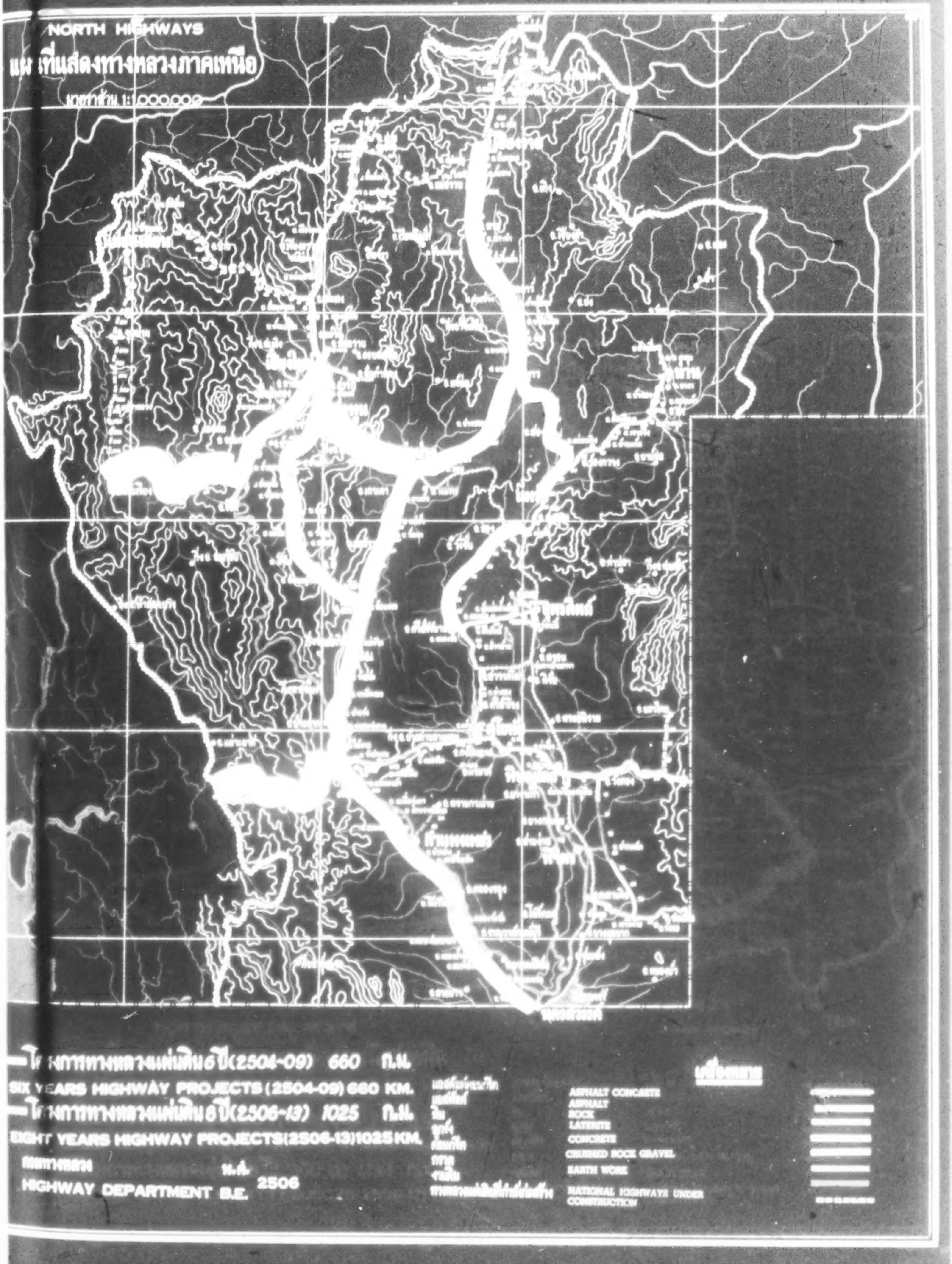
Postal Services

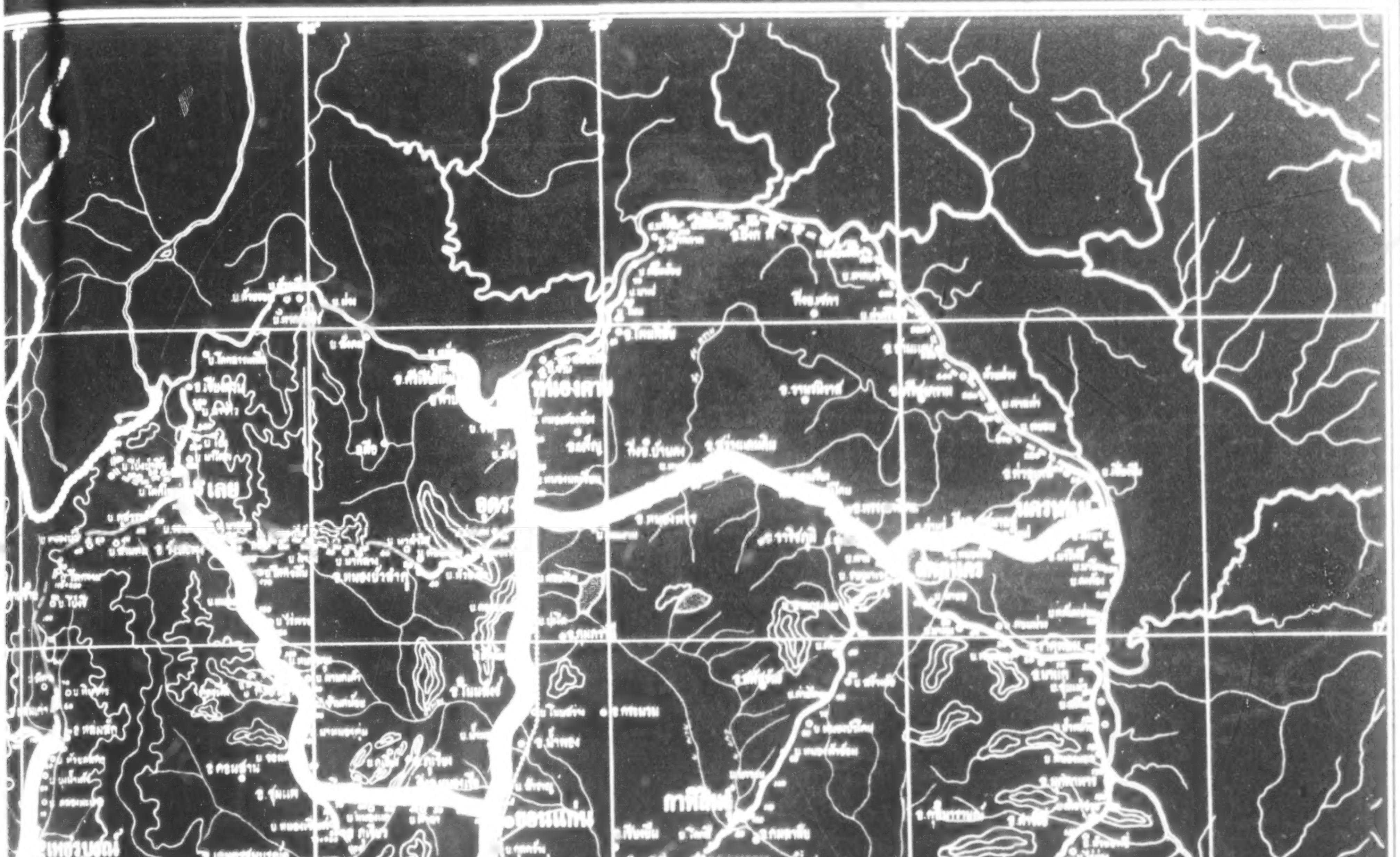
30. Bangkok-Thonburi. Originally, the General Post and Telegraph Office in Bangkok collected and distributed all letters and parcel post with considerable delivery delays and excessive cost. Under the postal service expansion programme of the Post and Telegraph Department three central offices are being constructed and, to decentralize further collection, sorting, and distribution, the region is subdivided into 12 postal areas each with its own office.

31. Outside Bangkok-Thonburi. Of the 1,039 post and telegraph offices and agencies throughout the Kingdom only 184 are operated by the Post and Telegraph Department itself, the remainder being under the management of district offices, railway postal agencies and private licensed postal offices. To train an increasing number of postal employees for efficient work in the postal locations outside Bangkok-Thonburi and to meet other costs in expanding provincial postal services an estimated 50 million baht in Budget funds will be spent during 1964-1966. It is planned to staff 20 offices in 1964, and 30 offices each in 1965 and 1966, 10 with trained Post and Telegraph Department personnel. The total number of postal agencies still to be staffed is expected to number 805 at the and of 1966, since 10 new agencies need to de set up each year and the Department still will have to depend for personnel on outside agencies and private sources.

Telegraph Services

32. Under the Development Plan a programme was launched (in 1963) to replace old cables and expand telegraphic facilities to areas not being served. Altogether


NORTH HIGHWAYS
แผ ที่แสดงทางหลวงภาคเหนือ
มาตราส่วน 1:1,000,000
โค งการทางหลวงแผ่นดิน 6 ปี (2504-09) 660 ก.ม.
SIX Y EARS HIGHWAY PROJECTS (2504-09) 660 KM.
โค งการทางหลวงแผ่นดิน 8 ปี (2506-13) 1025 ก.ม.
EIGHT YEARS HIGHWAY PROJECTS (2506-13) 1025 KM.
กรมทางหลวง
HIGHWAY DEPARTMENT
พ.ศ.
B.E. 2506
เครื่องหมาย
แอสฟัลท์คอนกรีต
แอสฟัลท์
หิน
ลูกรัง
คอนกรีต
กรวด
งานดิน
ทางหลวงแผ่นดินที่กำลังก่อสร้าง
ASPHALT CONCRETE
ASPHALT
ROCK
LATERITE
CONCRETE
CRUSHED ROCK GRAVEL
EARTH WORK
NATIONAL HIGHWAYS UNDER CONSTRUCTION



กรมทางหลวง พ.ศ. 2506

HIGHWAY DEPARTMENT B.E. 2506

NORTH EAST HIGHWAYS

แผนที่แสดงทางหลวงภาคตะวันออกเฉียงเหนือ

มาตราส่วน 1:1,000,000

โครงการทางหลวงแผ่นดิน 6 ปี (2504-09) 257 ก.ม.

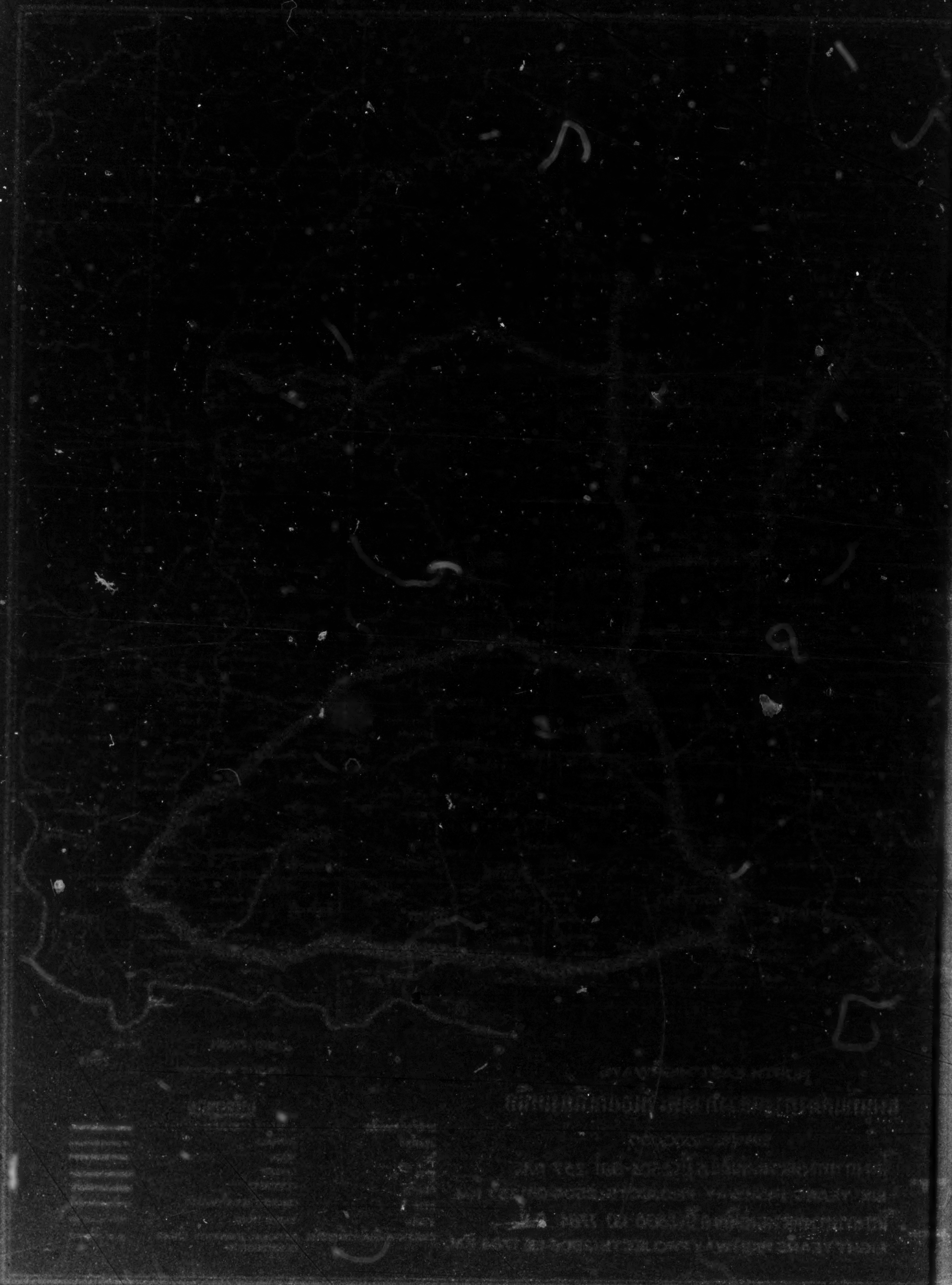
SIX YEARS HIGHWAY PROJECTS (2504-09) 257 KM.

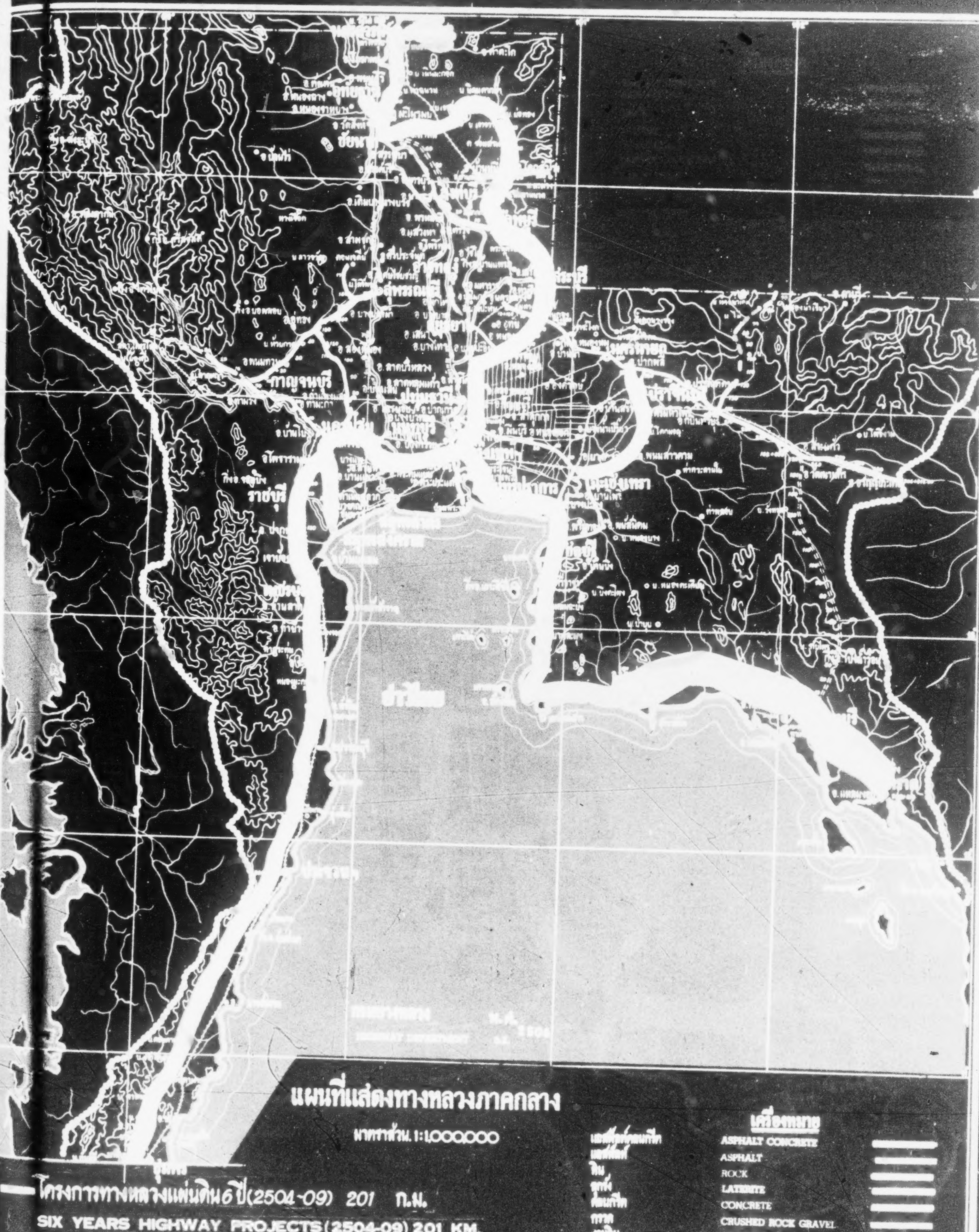
โครงการทางหลวงแผ่นดิน 8 ปี (2506-13) 1784 ก.ม.

EIGHT YEARS HIGHWAY PROJECTS (2506-13) 1784 KM.

เครื่องหมาย

แอสฟัลท์คอนกรีต	ASPHALT CONCRETE	━
แอสฟัลท์	ASPHALT	━
หิน	ROCK	━
ลูกรัง	LATERIE	━
คอนกรีต	CONCRETE	━
กรวด	CRUSHED ROCK GRAVEL	━
งานดิน	EARTH WORK	━
ทางหลวงแผ่นดินที่กำลังก่อสร้าง	NATIONAL HIGHWAYS UNDER CONSTRUCTION	╍




อ่าวไทย
เครื่องหมาย
แอสฟัลท์คอนกรีต
ASPHALT CONCRETE
แอสฟัลท์
ASPHALT
หิน
ROCK
ลูกรัง
LATERITE
คอนกรีต
CONCRETE
กรวด
CRUSHED ROCK GRAVEL
งานดิน
EARTH WORK
ทางหลวงแผ่นดินที่กำลังก่อสร้าง
NATIONAL HIGHWAYS UNDER CONSTRUCTION

แผนที่แสดงทางหลวงภาคกลาง

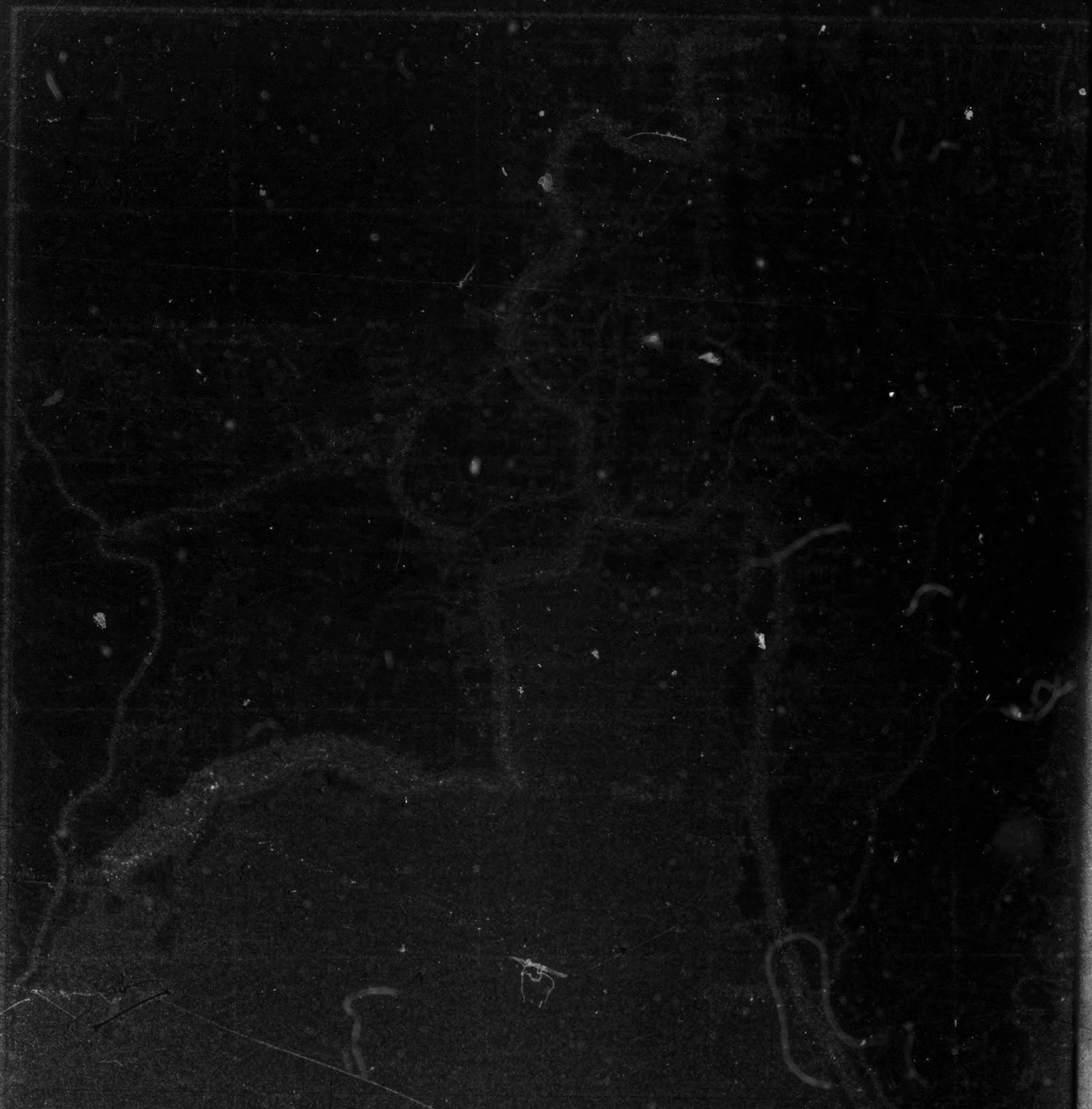
มาตราส่วน 1:1,000,000

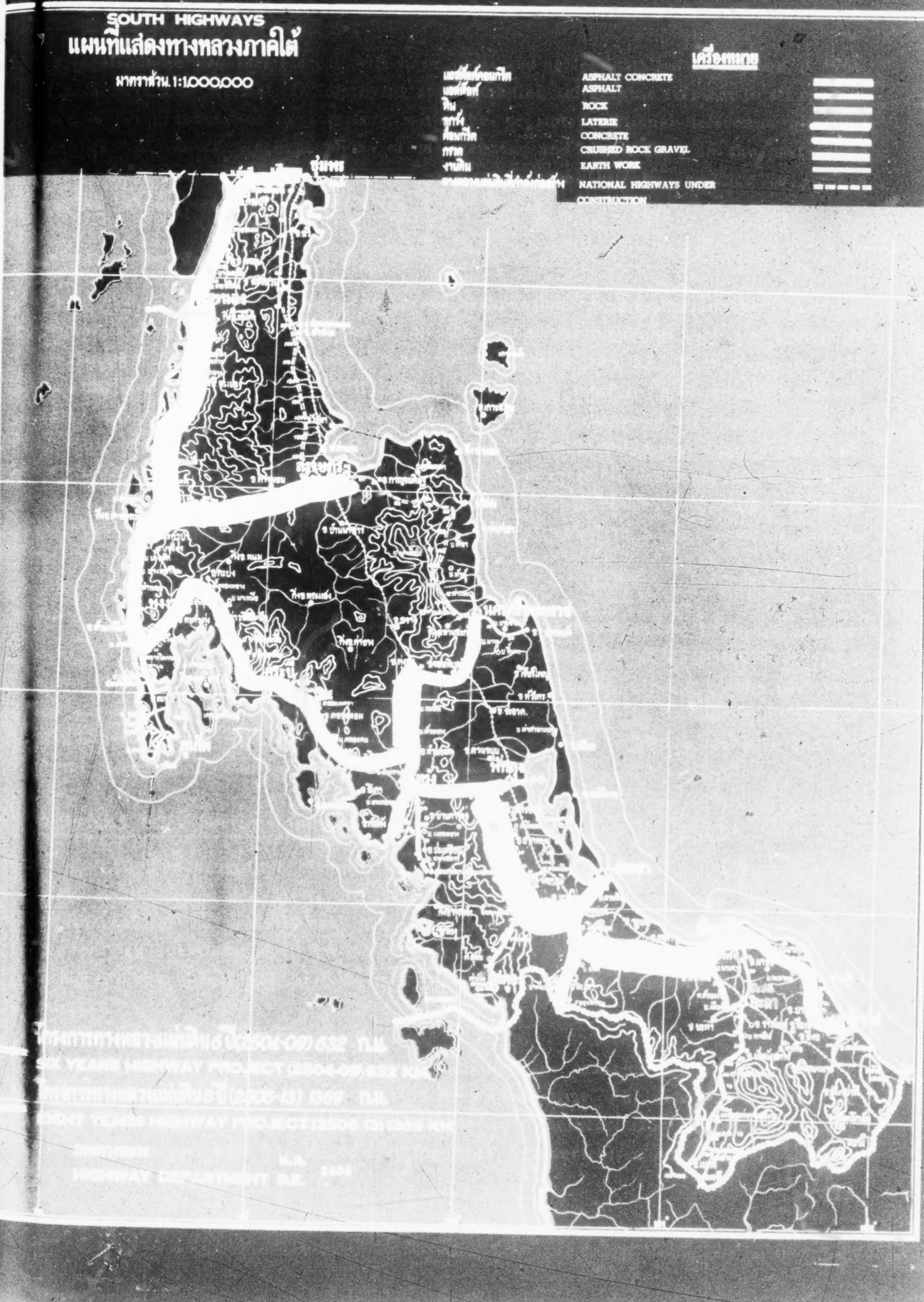
โครงการทางหลวงแผ่นดิน 6 ปี (2504-09) 201 ก.ม.

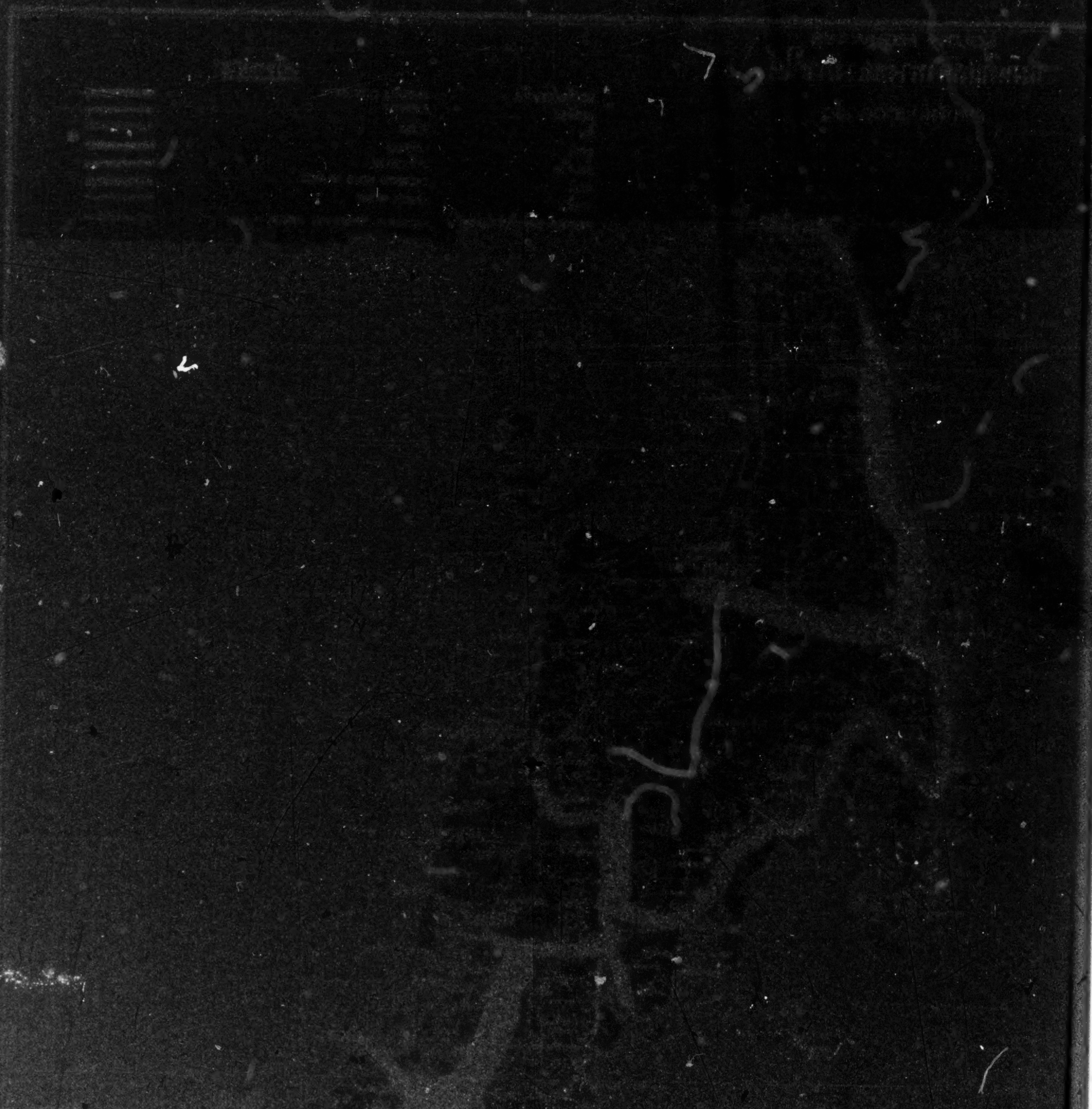
SIX YEARS HIGHWAY PROJECTS (2504-09) 201 KM.

โครงการทางหลวงแผ่นดิน 8 ปี (2506-13) 1263 ก.ม.

EIGHT YEARS HIGHWAY PROJECTS (2506-13) 1263 KM.




SOUTH HIGHWAYS
แผนที่แสดงทางหลวงภาคใต้
มาตราส่วน 1:1,000,000
เครื่องหมาย
แอสฟัลต์คอนกรีต ASPHALT CONCRETE
แอสฟัลต์ ASPHALT
หิน ROCK
ลูกรัง LATERIE
คอนกรีต CONCRETE
กรวด CRUSHED ROCK GRAVEL
งานดิน EARTH WORK
ทางหลวงแผ่นดินที่กำลังก่อสร้าง NATIONAL HIGHWAYS UNDER CONSTRUCTION
ชุมพร
โครงการทางหลวงแผ่นดิน 6 ปี (2504-09) 632 กม.
SIX YEARS HIGHWAY PROJECT (2504-09) 632 KM.
โครงการทางหลวงแผ่นดิน 8 ปี (2506-13) 1369 กม.
EIGHT YEARS HIGHWAY PROJECT (2506-13) 1369 KM.
กรมทางหลวง พ.ศ. 2506
HIGHWAY DEPARTMENT B.E.



68 localities in provincial areas will have posts and cables installed by the end of 1966, if present targets are met. In improving and extending telegraphic services to all regions, care is being taken not to interfere with the projected national telecommunications network. Moreover, since problems of maintenance and repair have in the past arisen when posts of the State Railways were used, new cables will be installed in such a way as not to create similar problems in the future.

Telephone Services

33. Under the 5-year (1960-1965) expansion programme of the Telephone Organizaton of Thailand, the capacity of the automatic telephone exchange system in the Bangkok-Thonburi metropolitan area will be expanded by 25,500 numbers. In 1966 an additional 7,000 new lines will raise the country's total to approximately 62,000. Forty-three provinces and 8 amphurs will have new or improved telephone service as a result of expenditures during the second half of the Development Plan period and, by the end of 1966, local telephone service will be available in 54 provinces and 16 amphurs, with automatic telephone exchanges in 17 of these provinces and 3 of these amphurs. Altogether, 30,000 telephone lines are expected to be in operation outside the Bangkok-Thonburi area by then.

34. Provincial telephone service, formerly under the Post and Telegraph Department, is now the responsibility of the Telephone Organization of Thailand. In addition to the developments stated above in expanding the telephone service in the provinces and amphurs, the Telephone Organization is proceeding with the installation of a trunk switchboard which will hook up the telephone lines in major provinces with the national telecommunication system.

Radio and Telex Services and Other Telecommunications

35. The programme for the expansion of radio-telegraph and radio-telephone service is in two stages, first, the installation of high frequency radio transmitters for internal services and, second, the establishment of direct radio-telephone-telegraph between Bangkok-Oakland, U.S.A., and with Malaysia. When and if ordinary telegraph services break down, the new facilities will serve as vital reserve communication stations.

36. Using the telex printer makes possible the transmission of long written information from one point to another in very short time. The establishment of telex service for domestic and external use will not only facilitate rapid communication but will yield revenues that can be utilized for other communication development. By the

end of 1966 it is anticipated that telex services will be available in Bangkok and in 15 provinces. Moreover, Hong Kong, Singapore, and Switzerland will be linked with Bangkok by means of an international telex system.

37. To increase the speed and efficiency of telecommunications (telegraph, telephone, telex, and radio services) between provinces, a national microwave system is being installed and personnel are being trained to operate and maintain it. Expectations are that by 1966 the interprovincial links between the central, northeast, eastern, northern, and southern regions will be completed. It is planned to assign responsibility for this project and for the improvement of telephone and other facilities essential to the system's efficient operation to a national telecommunication organzation. The installation of a national microwave system in Thailand is being financed to a considerable extent by loans and grants from the U.S. Government. The U.N. Special Fund is providing financial and technical assistance in establishing and running the telecommunication training centre.

Outlook for the Future

38. Assuming the effective implementation of existing and projected programmes in the transportation and communication fields during 1964 - 1966 and in the decade following, the outlook in major areas appears briefly as follows:-

a. **Highways and Feeder Roads.** Under the eight-year national highway Plan (1963-1970), the expectation is that by the year 1966 some 3,700 km. of national highways will have been surveyed and 1,830 km. will either have been improved or constructed. Under the provincial highway Plan (1965-1970), it is anticipated that, by 1966, approximately 1,000 km. will have been surveyed and between 700-1,000 km. will either have been improved or constructed. In addition, it is expected that equipment centres for provincial road maintenance and construction work will be established in each region.

b. **Railways.** Ten years after 1966 most of the railway development projects which are at present envisaged will have been completed, including the construction of lines to the port of Sriracha. The construction of a new railway route to link the Korat route directly with the port and facilitate the flow of goods between the Northeast and the port will have been undertaken. The replacement of steam locomotives by diesel engines is expected to continue. Also, to facilitate short excursions, more diesel trains will be introduced in the outer area of Bangkok and in nearby changwads.

c. **Ports.** The construction of Sriracha port may begin before 1967. It will serve as a supplementary port to the one in Bangkok. The existence of roads and a railway connecting the Northeast with Sriracha will make possible the export of goods by ocean-going ships directly fromt he Northeast via the new port thereby relieving port congestion at Bangkok. By 1976 other ports in the south that may become accessible to large coastal vessels are Songkla, Pattani, Narathivas, Kantang and Phuket. The construction of another major port in the South serving the country's trade with Malaysia and the other neighbouring countries and able to accommodate 5,000-ton ships is envisaged.

d. **Inland Water Transport.** Inland water transport will be greatly facilitated by continued dredging of river beds. The shipment of bulky products will be increasingly by waterways and some large inland waterway shipping companies may be established with Government encouragement.

e. **Air Transport.** In the decade ending in 1976 the new commercial international airport may be in operation and civil aviation will be independent of military aviation. Civilian air traffic control will then be the responsibility of a single agency, a Civil Aviation Authority. The Thai Airways Company's maintenance and overhaul base would be transferred from its present location to the new airport where it could operate more conveniently and expand its work. These developments would contribute to the greater efficiency of the air transport system of Thailand. It is further envisaged that all commercial airports in Thailand will be up to international standard by 1976, making possible year-round service. All airports will be adequately equipped with necessary air and traffic control devices for night flights.

f. **Post and Telecommunications.** With respect to the development of communication facilities, by the year 1976 Bangkok and Thonburi will have an efficient and fully adequate telephone system to meet the increasing demand of the population. All the changwads, too, will have telephone facilities. Long distance calls will be possible direct from the subscriber's home. More adequate telegraph service will be available and the replacement of old telegraph poles and cables with new ones will be completed during 1972-1976. Telex service will be available for all major regions of the country and a national telecommunication system will be in operation. As for post and telegraph services, there are expected to be a total of 1,200 local post offices through out the Kingdom, 600 of which will be operated by the Post and Telegraph Department, assuming that 10 addition postal agencies will be established each year and that 40 agencies will be taken over yearly during 1967-1971 and 50 each year during

1972-1976. Further, Bangkok and Thonburi and outer areas will be served by delivery and clearing centres attached to each zone thereby contributing to a more efficient postal service system.

Expenditure

49. The expenditure proposed to be incurred in the further development and improvement of the communication and transportation systems, utilizing Budget appropriations and external assistance in the form of loans and grants, is presented in the table below.

Table 1

NATIONAL BUDGET EXPENDITURES, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
1. Construction and improvement of national and provincial highways	520.25	770.03	1,237.12	2,527.40
2. Expansion and improvement of telephone service system	31.42	-	-	31.42
3. Survey, improvement and construction of airports	88.85	96.00	65.00	249.85
4. Aeronautical radio services	17.29	8.10	1.20	27.22
5. Development of postal, telegraphic, telex and radio telegraphic services	79.75	75.20	78.10	233.05
6. Survey of inland waterway and dredging of navigable channels	50.30	74.90	48.98	174.18
7. Engineering survey of Sriraja port	-	25.00	40.00	65.00
8. Construction of microwave system	18.73	100.00	-	118.73
9. Truck replacement	5.70	3.90	3.90	13.50
10. Construction and improvement of State Railway system	48.00	153.70	46.00	247.70
11. Construction of Kangkoy - Buayai line	86.79	50.30	33.40	170.49
12. Development of domestic air service	27.58	3.00	3.00	33.58
13. Expansion of overhaul and maintenance base	3.70	2.60	1.60	7.90
14. Bangkok dock services	2.00	-	-	2.00
Total	980.99	1,362.73	1,558.30	3,902.02

Table 2

FOREIGN LOAN DISBUREMENTS, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
1. Survey, improvement and construction of national and provincial highways	157.70	351.40	688.50	1,197.60
2. Construction of microwave system	84.00	57.50	57.50	199.00
3. Construction of Kangkoy-Buayai line	195.60	24.30	12.50	232.40
4. Railway system improvements	36.10	165.90	104.60	306.60
5. Purchase of ocean-going vessels	-	78.00	-	78.00
Total	473.40	677.10	863.10	2,013.60

Table 3

FOREIGN GRANTS, F.Y. 1964 - F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
1. U.S. Economic assistance	113.00	79.00	78.00	270.00
2. U.N. Special Eund	16.50	23.80	9.40	49.70
3. U.N. E.P.T.A.	1.50	1.50	1.50	4.50
4. Colombo Plan	11.00	12.00	13.00	36.00
5. Other sources	5.00	6.00	6.00	17.00
Total	147.00	122.30	107.90	377.20

Table 4

ESTIMATED DEVELOPMENT EXPENDITURES. F.Y. 1964 - F.Y. 1966*

(In millions of baht)

Item	1964	1965	1966	Total
1. Budget	980.99	1,362.73	1,558.30	3,902.02
2. Foreign loans	473.40	677.10	863.10	2,013.60
3. Foreign grants	147.00	122.30	107.90	377.20
Total	1,601.39	2,162.13	2,529.30	6,292.82

* Excluding 712 millions baht contributed by state enterprises out of their own resources. (See Chapter 13)

Chapter 10

Community Facilities and Social Welfare

1. The development programmes for improving local and community facilities and public welfare services are a major responsibility of the Ministry of Interior and comprehend, in addition, the development activities of the municipalities and the other forms of local government in Thailand. The essential objective is to promote the welfare of the population by improving amenities and by increasing opportunities for economic and social advancement. Especially in the more depressed and remote rural and border regions, where security factors are of prime importance, high priority programmes are specifically designed to improve local living conditions and outlook in order to reduce the population's economic and social vulnerability to subversion.

2. In the field of public welfare, the most important objective is to render assistance to those people who cannot fully help themselves. All development projects of the Department of Public Welfare have this in view. For example, the self-help land settlement project aims at assisting people who are without land to acquire cultivable land and to settle down peacefully as respectable cultivators of the soil. This is one of the measures taken to further the prevention of crime. Another project is directed towards orphans, homeless children, juvenile delinquents, and other underprivileged or socially maladjusted youngsters. Still another project is pointed towards groups of people cast adrift by society, such as drug addicts, beggars and prostitutes. These people are not accepted by the community and the Government has to step in to give them medical care and occupational training so as to enable them to earn their living like other normal people. Programmes concerning the promotion of employment, the protection of the labour force and the social security scheme seek to protect the labour force from injustice and exploitation. The Department of Public Welfare also looks after wage rates and hours of work and acts as the representative of the workers in the bargaining on wages and working conditions. This is due to the fact that under existing conditions if individual workers were to bargain with their employers, they normally would not be expected to get a square deal. In labour conflicts between workers and employers, Department officials consequently step in and act as moderators. This intervention by Government gives greater confidence and sense of security to the workers which may directly and indirectly increase the willingness to work and thus the productivity of labour.

The low-income housing scheme is another important project designed to help the underprivileged. Only a modest beginning has so far been made, but very much larger funds are being provided for it over the next three years.

3. To encourage people who live at some distance from developed areas to help themselves to better their standard of living is the main purpose of the Government's Community Development Programme. There is a large number of somewhat neglected villages that can be developed if they are provided with a good leader, who has a sense of initiative and understands the Government's aims. Community development workers sent to these village will try their best to improve the villages, not merely by increasing agricultural productivity and their income, but also by promoting their well-being: better health from better food and better homes, Government to fight against subversive political more fruitful employment of spare time. This is one of the measures taken by the infiltration, as it will lead finally to an understanding of the self-governing, democratic way of life.

Coordinated with this effort is the Government's Rural Development Programme which is designed to accelerate development in the border provinces in the North and Northeast. The Government has set up the Rural Development Planning Committee to facilitate development work in these provinces, coordinating political and economic factors. This Committee will also facilitate the transfer of the work of special mobile development units to the Ministry of Interior's Community Development Department and related agencies.

4. Projects falling under the heading of public utility works can be grouped into three categories: Firstly, waterworks, which include both the waterworks of Bangkok and Thonburi and the provision of potable water in towns in the provinces. The latter will include waterworks, artesian well drilling, and other means of securing clean water. These projects aim at procuring sufficient water for those of the population who are in need of it. Secondly, there are public utility projects which are in the nature of town planning, including the planning of roads, sewage systems and slum clearance. This is important not only in Bangkok but also in some of the rapidly developing provincial towns of the Kingdom. Advance technical town planning will eliminate many future difficulties. Thirdly, there are local government development undertakings which are promoted by means of Central Government grants-in-aid or subsidies or through direct appropriations to the Local Administration Department of the Ministry of Interior. These grants support economic and social development projects, e.g., construction and improvement of local roads, improvement of drainage systems, slum clearance, school building construction, and improvement of health centres, market construction, town planning, etc. A large share of the expenditure is paid for by

the local governments themselves from taxes, fees, property income, reserve funds, loans, etc.

Expenditure

4. The statement below shows the proposed Budget expenditure in the Six Year Development Plan on the foregoing projects/programmes.

Table 1

NATIONAL BUDGET EXPENDITURES, F.Y. 1961-F.Y. 1966

(In millions of baht)

Item	1961-1963	1964-1966	Total
1. **Public Welfare**			
a. Land settlement	72.12	172.56	244.68
b Low income housing	-	186.00	186.00
c. Employment and social security	-	87.55	87.55
d. Other welfare programmes	68.77	100.85	169.62
Total	140.89	546.96	687.85
2. **Community and Rural Development**	61.90	247.69	309.59
3. **Public Utility Works**			
a. Bangkok and Thonburi waterworks	33.06	182.98	216.04
b. Municipal planning and local government promotion	291.00	478.00	769.00
c. Provincial water supply	69.97	172.57	269.54
d. Other local government works	13.55	59.36	72.91
Total	434.58	892.91	1,327.49
Grand Total	637.37	1,687.56	2,224.93

6. In addition, the municipalities and local governments provided an estimated 628 million baht in 1961-1963 and are expected to contribute 1,341 million baht in 1964-1966 for development undertakings. Foreign supplier credits amounting to 442 million baht helped finance the improvement and extension of the Bangkok-Thonburi water supply systems and foreign grants of 15 million baht were utilized in community development, city planning, and other programmes during the former period. In 1964-1966 it is expected that 475 million baht in foreign supplier credits will pay for completing the Bangkok-Thonburi water supply projects and about 241 million baht of foreign grant assistance will be available for other programmes, mainly community development.

The details of some of the projects/programmes are given in the following paragraphs.

Project and Programmes

7. **Public Welfare.** One of the most outstanding projects is the Self-Help Land Settlement sheme. It was started more than 25 years ago, mainly with the object of providing a livelihood for unemployed persons in towns and cities, prisoners released from jail, drug addicts and other socially displaced persons. About 25 rais of land were allocated to a family and in interest-free loan of 4,000 baht was advanced for the construction of a dwelling and the purchase of implements The scope of the scheme was subsequently extended so as to serve other purposes also, e.g., the settlement as agriculturists of members of the hilltribes. There are at present 40 self-help land settlements scattered throughout the country. Essentially, this project brings into productive use uncultivated lands and creates communities where none existed before, since the Government provides the settlements with roads, schools, health centres, market places, and public utilities.

8. The Self-Help Land Settlement projects can be classified as follows: First are the general land settlement schemes. No new ones will be launched, but efforts will be directed towards the improvement of existing settlements. In most cases, tens of thousand rais of land were reserved, but only a few thousand have actually been cleared for cultivation. During the next three years, completion of the clearing of the reserved lands will be stressed so that there will be a more productive utilization of the land set apart for these self-help settlements. In three Northeast provinces an additional 6,500 families will be allocated land. Roads will be constructed or improved for all-weather conditions. Major settlements will have farm demonstration units. New settlers will be supplied with land clearing equipment and financial support. Schools, water wells and other facilities will be constructed and cottage industries utilizing local materials will be promoted. In other parts of Thailand the Department's programme of allocating small plots of land will be continued. Aerial mapping, started in F.Y. 1963 and to be continued during the next three years, will accelerate the land allocation programme.

9. The second type of settlement scheme is designed for the benefit of the hilltribes. Four such settlements in the North were started only very recently and are in the process of improvement and expansion so as to deal with the problems more effectively. They will be enlarged to accommodate an additional thousand families. Seeds and livestock will be distributed and additional schools, health centres, etc., will be provided. Apart from the settlement schemes, hilltribes development centres will be established from which mobile units will be sent out to give assistance to hilltribes. These units will try to advise and assist the hilltribesmen in new agricultural occupations and not to cultivate poppy (for producing opium) and not to practise shifting cultivation. A centre will be set up at Tak on a pilot basis and additional ones will be started in due course. In the three year period it is expected that the mobile units will provide welfare services benefitting 140,000-210,000 hilltribesmen.

10. The third category of settlement scheme covers those having a special administrative or political importance; for example, those in the border provinces of the South and in different parts of the Northeast where there is danger of political infiltration. Two land settlement projects will be started in the South covering an area of five hundred thousand rais for the purpose of eventually accommodating about 30,000 families who are to be moved there from the Northeast and the densely populated Central Plain. It is proposed that these newly migrated families should cultivate coffee and rubber.

11. Other important programmes of the Department of Public Welfare involve the welfare of the underprivileged or maladjusted young, the disabled, the aged, drug addicts, beggars and prostitutes, and has a social justification. In respect to the welfare needs of children, the Department will train juvenile delinquents, provide financial assistance and welfare facilities to orphans and needy youngsters, improve youth centres, and advise local governments in this field. Adults in need will be provided shelter and food and will receive occupational training and assistance in finding employment with the cooperation of the Labour Division of the same Department. Some may be sent to one of the land settlements if they choose to make agriculture their livelihood. In this case, the Department will provide them with a plot of land, a certain amount of initial capital and some technical assitance to start with.

12. In the field of labour, the most important measure contemplated is the introduction of a social security scheme designed to give workers some insurance against death and against injury or illness incurred in the course of their work and to provide maternity benefits. Monthly contributions will be made by the employers, the workers themselves and by the Government, the amounts of which are yet to be finally determined. It is envisaged that this scheme will come into operation

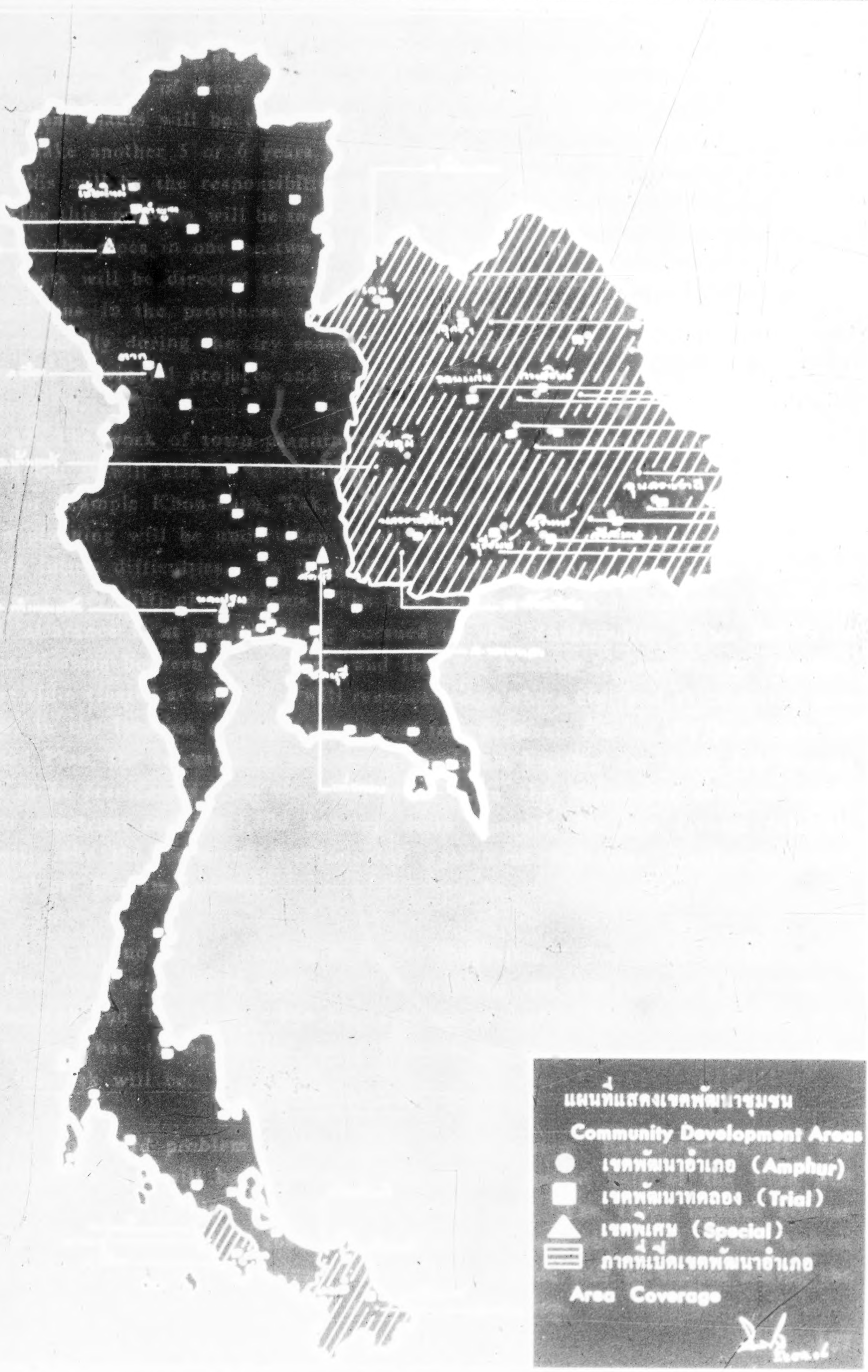
during the next three years. It will at first be restricted to Bangkok and Thonburi and to those commercial and industrial establishments employing 10 persons or more. An estimated 200,000 persons will be covered and it will be necessary to expand hospitals and health centres to provide the necessary facilities to accommodate the workers who will qualify for medical benefits. If the programme proves successful, wider coverage will be given to it and more benefits included.

13. It is also proposed to give more emphasis to the work undertaken by the Department for the promotion of employment, such as improved placement services and guidance, for the protection of the workers' wages and hours, and for the management of labour relations. Statistics in regard to wage rates, labour-management relations, and other categories of industrial labour conditions will also be improved.

14. Community and Rural Development. The Community Development programme is being initiated first of all in provinces of the Northeast and South. This does not mean that all other provinces will be completely left out. Such provinces as Cholburi in the East and Nakorn Patom in the Central Plain are also included in this programme. But the main effort and emphasis will be in the Northeast and South. The overall target for community development is to extend the so-called "area coverage" programme (covering an entire amphur area) over 60% of the Northeast and the four border provinces in the South during the second half of the Development Plan. Steps will be taken to train community development workers for the job in these villages. The aim is to recruit annually 200 new workers who will be provided with pre-service and in-service training.

15. As stated earlier, the Rural Development Planning Committee will facilitate the transfer of the work being done by the mobile development units to the Community Development Department of the Ministry of Interior in the Northeast border provinces. It will work closely with the USOM Rural Affairs Division. The programme emphasis is on short-term "impact" measures such as building rural roads, wells, and irrigation dykes and ditches. The existing Community Technical Assistance Centres at Ubol in the Northeast and at Yala in the South will be strengthened by enlisting the cooperation of all agencies engaged in specialized services, e.g., road construction, soil analysis, agricultural extension work, audio-visual aids, etc. A similar centre will be established at Udorn in the Northeast. Another project is to provide the border provinces with construction equipment pools, with a training centre at Korat.

16. Public Utility Works. Most of these projects fall within the categories of waterworks and town planning. The waterworks in Bangkok and Thonburi will be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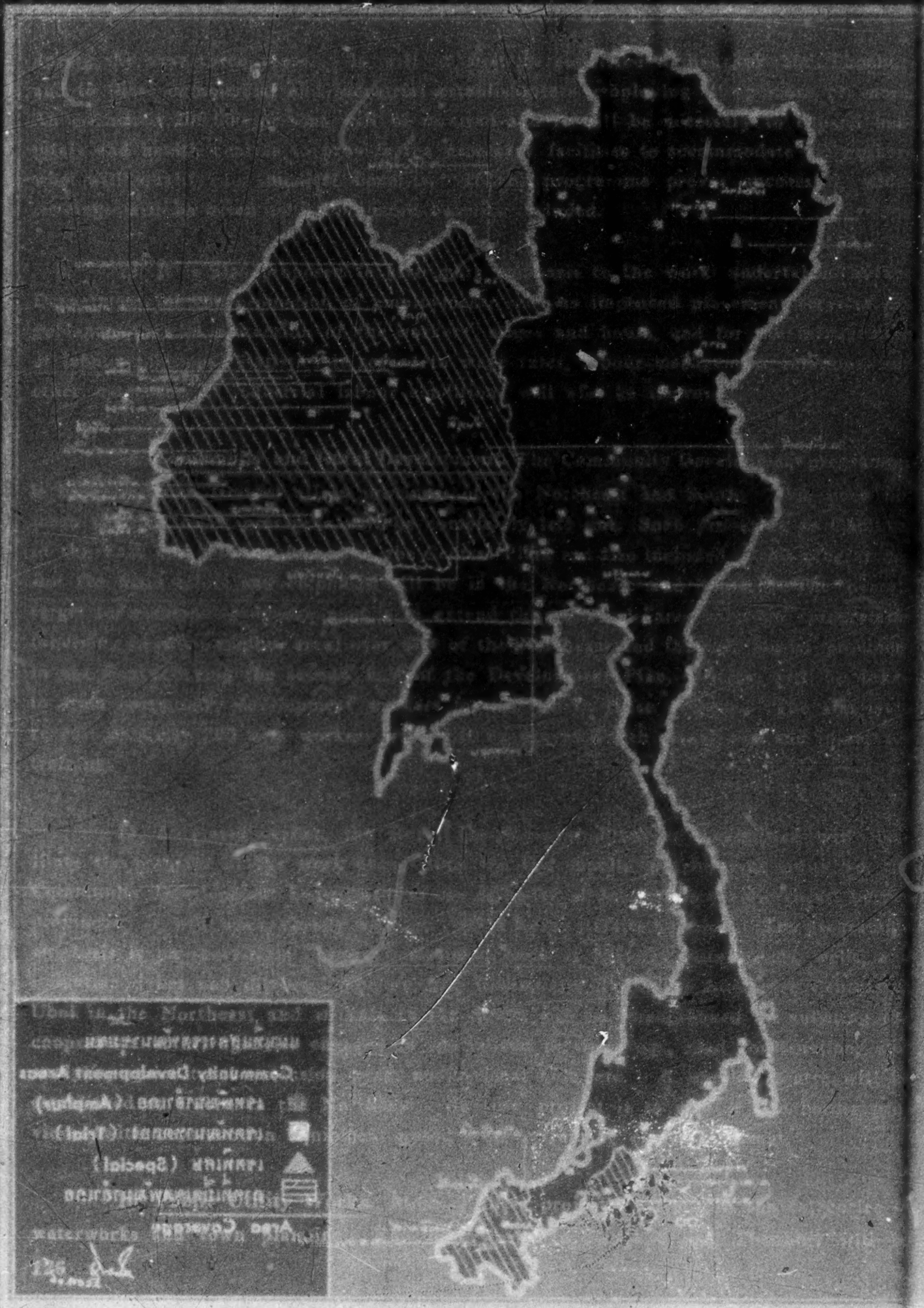
บุรีรัมย์
ศรีสะเกษ
แผนที่แสดงเขตพัฒนาชุมชน
Community Development Areas
● เขตพัฒนาอำเภอ (Amphur)
■ เขตพัฒนาทดลอง (Trial)
▲ เขตพิเศษ (Special)
▤ ภาคที่เปิดเขตพัฒนาอำเภอ
Area Coverage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Area Coverage

improved in efficiency so as to cope with the rapidly expandnig needs of the ever cimnerang population of these cities. Main pipes will be laid in different localities, and new treatment plants will be established. To complete the laying of secondary pipe lines will take another 5 or 6 years because of the much grater distance to be traversed. This will be the responsibility of the Public Works Department. The method of attacking this problem will be to divide Bangkok into several small sectors and each year to lay the pipes in one or two of these sectors. As regards provincial waterworks, efforts will be directed towards the establishment and expansion of waterworks in those towns in the provinces where an adequate supply of po/table water is still lacking, especially during the dry season. The target for the next three years is to start 19 new provincial projects and to expand 72 existing ones.

17. The work of town planning will be mainly concentrated in Bangkok and Thonburi, but it will also be undertaken in a few other major cities of the different regions, for example Khon-kaen, Tak, and Sakolnakorn. In fact, to the extent possible, town planning will be undertaken in all towns which are rapidly expanding, so as to obviate future difficulties. In Bangkok and Thonburi, town planning is confronted with several very difficult problems. The first of these is slum clearance. A scheme for slum clearance is at present being pursued by the Municipality. There has to be close coordination between this scheme and that for housing for low income families; otherwise slum cleared at one place will reappear some where else and there would just be a shift in the location of slums and no real improvement. During the three years of the revised Plan, the intention is to construct suitable housing for 5,000 low income families to be transferred from the slum areas. In the succeeding years a target is set to construct at least 1,500 housing units annually for low income families. These will take the form of multi-storied apartment buildings similar to those constructed on Din Daeng road.

18. A second major problem is traffic congestion. During the period of the revised Plan roads with heavy traffic will be widened and new roads will be constructed in Bangkok and Thonburi. The improvement of traffic facilites in Bangkok will take time and has to be started early because the longer it is deferred the more difficult the task will be.

19. The third problem is that of the sewage system. Rainwater drainage and flood control schemes will be undertaken during the second half of the Plan and will result in some reduction of mosquitoes in the area. The flood control scheme consists of raising the level of roads around Bangkok above the level of the highest tide, and the installation of pumping stations. This scheme will be started during the Plan period but will take a few years more for completion.

20. An overall plan for the Bangkok metropolitan area - the Greater Bangkok Plan was drafted by a team of foreign experts in 1960, but it did not prove possible to give early effect to this Plan. However, a committee has been set up to study the proposals and adapt them to the changes that have since taken place so that there may be some definite Plan for the metropolitan area.

21. The public utility works programme, as noted previously, also comprises assistance to local governments in the form of grants for promoting economic and social development undertakings. These promotion grants have as an additonal major objective the creation of an environment favourable to the democratic form of government. In border areas financial support is provided to the local governments for construction equipment pools. The Central Government, moreover, subsidizes in part the costs for constructing and repairing village roads. Another important project at the local or village level is the promotion of private efforts in the field of irrigation. Farmers are encouraged to construct and maintain minor irrigation works, e.g., dykes, weirs and watergates, and receive financial recompense for their labour and material costs. A six-year programme for private irrigation works is envisaged, commencing in F.Y. 1965 and paralleling the Feeder Roads Programme.

Progress To Date

22. Many goals in the field of community facilities and social welfare were met during the first half of the Plan period. At the same time, inadequate planning and administration and other difficulties kept other targets from being attained. Among the brighter accomplishments is the land classification and survey work which by the end of 1962 amounted to about 122,000 square kilometres and represented a third of the total objective. Further, allocations of 821 thousand rais of small plots of land (not larger than 1,000 rais) - - the target was 300,000 rais in 1961-1963 - - were made in the first two years of the Plan to 50 thousand persons having ownership certificates. Other public welfare projects generally progressed in a favourable manner. On the other hand, provincial waterworks development has been unsatisfactory and the community development programme, for lack of sufficient competent personnel and other reasons, has been disappointing. The Plan revision is expected to meet these and other shortcomings and to result generally in an improved level of performance,

Chapter 11

Public Health Development

1. The broad objectives of the public health programmes embodied in the Six Year Development Plan are:-

a. to expand and improve facilitites for the medical care of the sick; and

b. to promote the general health of the population by systematic control of communicable diseases, improvement of environmental sanitation, and provision of better maternity and child welfare services.

To attain these objectives medical personnel of various types are urgently required in large numbers. Provision for their training has, therefore, to be made. There is also need to promote and strengthen laboratory and research facilities so as to assist medical and health officers in the treatment and prevention of diseases.

Expenditure

2. The total expenditure including 155 million baht of counterpart funds, proposed to be incurred from the National Budget on health projects/programmes during the Six Year Development Plan period is approximately 1,027 million baht. This can be grouped under the four main headings of curative measures, preventive measures, training, and research as shown in Table 1.

Table 1

NATIONAL BUDGET DEVELOPMENT PLAN EXPENDITURES, F.Y. 1961-F.Y. 1966
(In millions of baht)

Item	1961-1963	1964-1966	Total
1. **Curative Measures**			
a. Improvement of hospitals and services under the Department of Medical Services			
(1) Provincial hospitals	36.24	158.41	194.65
(2) Bangkok hospitals	21.71	41.14	62.85
(3) Mental hospitals	17.40	35.19	52.59
(4) National Cancer Institute	-	6.00	6.00
	75.35	240.74	316.09

(Continued on next page)

+165

Item	1961-1963	1964-1966	Total
2. **Preventive Measures**			
a. Control of contagious diseases			
(1) Malaria 1/	67.94	122.00	189.94
(2) Tuberculosis	16.61	48.26	64.87
(3) Filariasis	.70	2.31	3.01
(4) Leprosy	40.37	59.10	99.44
(5) Yaws	9.61	21.47	31.08
(6) Small-pox, Cholera, etc.	13.32	19.02	32.34
	148.52	272.16	420.68
		+124	
b. Promotion of health and sanitation			
(1) Provincial health centres	16.35	80.11	96.46
(2) Sanitation and water supply 1/	19.43	64.30	83.73
(3) School health	1.15	14.11	15.26
(4) Maternal and child welfare	5.54	20.33	25.87
(5) Nutrition	2.00	4.78	6.78
	44.47	183.63	228.10
		+140	
3. **Training**			
a. Training of nurses, nurse midwives, midwives and other health workers	15.22	26.46	41.68
4. **Research**			
a. National Public Health Laboratory	5.23	15.69	20.92
Total	288.79	738.68	1,027.47

Note: The figures for 1961-1963 and those for 1964-1966 are not strictly comparable because certain "development" expenditure has been included in the latter which was treated as ordinary expenditure in the earlier period.

1/ During 1961-1963 the Budget contribution to the joint counterpart fund for malaria, sanitation, and water supply programmes amounted to 62 million baht and it is estimated that the corresponding contribution in 1964-1966 will amount to 92 million baht.

3. In addition foreign aid and loans have been or are expected to be obtained for certain projects/programmes, amounting in all to the equivalent of 488 million baht. Thus the total expenditure over the whole six year period will be approximately 1,516 million baht of which 1,067 million will be incurred in the next three years.

The main features of the projects/programmes falling under the several headings noted in the table are given in the following paragraphs.

Curative Measures

4. **Provincial Hospitals.** At the beginning of the Development Plan period, besides hospitals of various categories in Bangkok, there was at least one public hospital in each of the 71 provinces and 8 more in some of the heavily populated districts with a total of about 5,613 beds. During the first half of the Six Year Plan period (1961-1963) seven new district hospitals were constructed. In the next three years one new district hospital is proposed to be established at Yasothorn in the Ubol province, but the main emphasis will be on expanding and improving the existing hospitals by constructing new wards and auxiliary buildings, adding to the equipment and increasing the staff. Thus three provincial hospitals at Pitsanunloke in the North, Nakornrajasima in the Northeast and Songkla in the South will be converted into Regional Hospitals, each with 450-500 instead of about 300 beds, and with specialists in various fields of medical services and modern equipment. At Khonkaen a new three-storey ward of 200 beds will be constructed in place of old wards with a combined capacity of 100 beds. Special maternity and child wards will be provided at 30 hospitals; at 25 hospitals X-Ray and surgery buildings will be constructed; at 35 hospitals additional general wards of 50 or 25 beds' capacity will be built, and at a number of others residential quarters will be built for doctors, nurses and other personnel.

Altogether the number of beds is planned to be increased by roughly 800-1,000 per annum, raising the total from 7,190 in 1963 to 10,200 in 1966 and bringing down the ratio of beds to population fom 1:3,700 to 1:2,800. During the same period the number of doctors and nurses attached to these hospitals is proposed to be raised from 538 and 1,267 to 778 and 1,867 respectively. The ratio between doctors, nurses and beds will then be 1:2.4:13, which does not compare too unfavourably with the international standard of 1:4:10.

5. **Bangkok Hospitals.** Some comparatively minor additions and improvements will also be made to the three main hospitals in Bangkok under the direct control of the Department of Medical Services, viz the Lert Sin Hospital, the Women and Children's Hospital and the Buddhist Priests' Hospital. The number of beds will be raised from 1,960 to 2,210 and the number of doctors and nurses from 126 and 381 to 148 and 554 respectively.

There are a number of other hospitals in Bangkok under control of various Government agencies -- the Police Hospital and the Armed Forces Hospitals under, respectively, the Ministries of Interior and Defence, the General Hospital and the Vajira Hospital under the Bangkok Municipality, and the Siriraj Hospital and the Chulalongkorn Hospital under the Office of the Prime Minister. These hospitals have at present about 7,000 beds and a staff of about 650 doctors and 1,700 nurses. In all, therefore, the hospitals in Bangkok run by Government agencies provide 8,960 beds and are served by 776 doctors and 2,081 nurses It is expected that by 1966 the number of beds will be raised to 10,100, giving a ratio of beds to population of 1:270, and the number of doctors and nurses to 923 and 2,704 respectively. The ratio between doctors, nurses and beds will be 1:2.9:10.9 compared with 1:2.7:11.5 today.

6. **Special Hospitals for Mental and Nervous Disorders.** The six existing mental hospitals have at present 5,000 beds which will be raised to 5,350 in 1966. Of the new beds, 200 will be in convalescent wards. The staff is proposed to be increased more than proportionately, from 76 to 108 in the case of doctors and from 111 to 141 in the case of nurses. A five-storey brain surgery building will be built at Somdej Chao Praya Mental Hospital. In additional, occupation therapy workshops and staff quarters will be constructed at some of these hospitals.

The Institute of Mental Deficiency, which was opened in 1960 for the handling of mental defectives, has accommodation at present for 150 patients. It is proposed
100 to add two new dormitories each of 50 bed capacity, one for boys and one for girls. The staff will also be proportionately increased and staff quarters constructed.

In the field of neurological and nervous disorders, the Prasart (neuro-psychiatric) Hospital at Phya-Thai, which at present has approximately 150 beds and a staff of 16 doctors and 26 nurses, will be enlarged by the construction of a convalescent ward of
50 50 beds, and an occupational-therapy building. There will be a corresponding increase in the staff. Assistance will also be given to promote the study of nervous diseases at
100 the Prasart Hospital. In addition, a new hospital of 100 bed capacity is proposed
50 to be established at Songkhla and another for children of 50 bed capacity in the vicinity of Bangkok. Thus the beds provided in this type of hospital will increase from 150 in 1963 to 400 in 1966. It is also expected that the expanded facilities will enable 250 out-patients to be treated per day as against 150 at the present time.

In the field of cancer treatment and research it is proposed to establish the National Cancer Institute in 1966.

Preventive Measures

7. **Control of Contagious Diseases.** Effective measures were taken a number of years ago to bring under control such disease as small-pox, cholera, typhus and plague, and these are no longer a serious scourge in Thailand. However, funds are being provided for the extension and more frequent repetition of vaccination and a quarantine building is proposed to be added to the Hospital for Communicable Diseases at Nonburi.

The special measures to be undertaken for the control of other diseases, the incidence of which is relatively high in Thailand, are described below:-

Malaria Eradication

8. Since spraying with DDT was introduced in 1949, first with assistance from WHO and later with assistance from the US Government, the incidence of malaria in Thailand has been very greatly reduced, and the possibility of aiming at complete eradication is now not far distant. Over the next three years it is proposed to spray every house in localities where malaria is still extensively prevalent, particularly in the border provinces where there is danger of the disease spreading from neighbouring countries. Arrangements will also be made for systematic case-finding and treatment of infected persons in areas where spraying has been undertaken for 3 consecutive years.

The malaria deathrate has been brought down from 250 per 100,000 in 1950 to about 17 in 1963 and is expected to fall to about 7 by 1966.

Filariasis

9. Endemic filariasis is restricted to the southern provinces of Thailand and the low-lying rural areas in the eastern coastal belt, but in these areas it presents quite a serious problem. No wholly effective measures for controlling this disease have yet been devised. It is proposed during the next 3 years to undertake active case-finding and treatment of all infected persons in 6 southern provinces, to establish control offices and mobile evaluation units at Pattani and Chumporn, and to set up a filariasis research centre at Nakornsrithamraj.

Tuberculosis

10. BCG vaccination has been carried out on a fairly large scale ever since 1953. During the next 3 years it is proposed to open a new Chest Clinic at Yala and to make some improvements to the three already existing. Six new mobile units will be added to the 2 existing units now in operation.

In the field of thoracic surgery it is proposed to estalbish a new T.B. hospital of 100 bed capacity at Khonkaen as well as improving the existing one at Nonburi. It is anticipated that by 1966 the beds at these two hospitals will be increased from 400 to 500.

It is also hoped that deaths from this disease will be reduced from 31.2 per 100,000 in 1961 to 20 in 1966.

Yaws

11. This debilitating disease used to be highly prevalent in over 40 provinces, but a campaign against it, initiated in 1950 with the assistance of WHO and UNICEF, has met with such success that its final eradication is now within sight. In many provinces, which were previously badly infected, yaws control has now been merged with normal rural health services and it is hoped to complete this integration within the next three years and to bring the programme of active control to an end. It is, however, proposed to equip and retain at strategic locations eight watchdog mobile teams which will be able to render swift and efficient service when need arises. Moreover, the yearly retaining of the existing rural health personnel in the integrated areas with the assistance of UNICEF will improve the knowledge of the workers in yaws control as well as the other multipurpose health activities.

Leprosy

12. In 1955 with the assistance of WHO and UNICEF a pilot leprosy control project was started in the province of Khonkaen. It aimed at ambulatory treatment of leprous patients after a house to house survey. In view of the success achieved, the service was extended to eight other provinces. It is proposed during the next three years to extend it to 14 more provinces.

Government now maintains 2 leprosaria, 13 leprosy villages and 9 leprosy control units. It is proposed during the next three years to set up 3 leprosy control units in the South. In addition provision is made for carrying out some improvements to the existing control units by constructing residential quarters and other auxiliary buildings.

Promotion of Health and Sanitation

13. Measures for the positive promotion of health through better water supply and sanitation, improvement of provincial health centres, nutrition, school health, and child welfare are described below.

a. Provincial Health Centres. The Division of Rural Health will be launching a large programme for the improvement and extension of provincial health centres. There are at present two classes of health centre. A first-class centre has a maxinum of 10 beds for emergency cases and a staff consisting of at least one doctor, a nurse, a sanitarian and a midwife. A second-class centre has no beds, but a mininum staff of a sanitarian and a midwife. There are today 161 first-class and 704 second-class centres. The intention is to convert second-class into first-class ones at the rate of 10-15 per annum and to establish about 15 new second-class centres per annum in sub-districts which are fairly well populated and are able to make some financial contribution to the cost.

b. Sanitation and Water Supply. In the past 10 years some efforts have been made to improve environmental sanitation with special reference to safe water supply and the disposal of refuse and excreta. A small number of villages were selected for special attention. During the next three years work will be continued in these villages and will be extended to 200 more villages in the central region. It is proposed to give training to 100 local health officers to enable them to carry out the sanitation programme in these 200 villages. Moreover, to overcome the shortage of follow-up health workers a comprehensive training course at Cholburi and Khonkaen training centres will be offered to 350-400 persons who will work in villages where the programme has already been launched.

The provision of an assured supply of water for domestic uses is one of the main problems in the rural districts of Thailand. It is particularly acute in the Northeast Region where many villages suffer chronically from shortage of water. With US assistance a start has been made on repairing existing wells and providing new ones and some deep drilling has been undertaken where the needs cannot be met by shallow wells and tanks. It is recognized that this programme requires to be considerably expanded and accelerated. The way in which this can be done most effectively is being examined, and if satisfactory arrangements can be worked out for an enlarged programme, it is intended to make further financial provision for it.

c. School Health. For quite a number of years the School Health Division has been supervising the health of school children in more than 185 primary and secondary schools in Bangkok and Thonburi. Efforts are now being made to carry these services to schools in the rural areas, mainly through mobile unit. Each unit consists of one school health physician, two nurses and a dental-hygienist. At present there are 8 such units in operation (6 in Bangkok and Thonburi and 2 in the provinces). It is proposed in the next three years to add 13 more units and, moreover, to open a central dental clinic in Bangkok and 2 dental health units in Bangkok and Thonburi.

d. **Maternal and Child Welfare.** There are maternal and child welfare centres in Bangkok, Chiengmai and Nonburi. At the latter it is proposed to make special arrangements for the care of infants and young children whose families are afflicted with dangerous contagious diseases.

Three mobile MCW units are now in operation in the Central, South and Northeast Regions to help mothers and children in isolated areas which cannot be reached by midwives posted at the provincial health centres. The ultimate objective is to assign one such unit to each of the provinces where such services are urgently needed.

At all three MCW centres refresher courses will be held for second-class nurse-midwives and for indigenous midwives (moh tamyae). In addition it is expected that 160, 260 and 300 second-class nurse midwives will be trained in the next three years at the midwifery school in Bangkok, Lampang and Khonkaen. A proposal to establish a fourth school at Yala is under consideration.

Nutrition. Though Thailand is a country with surplus food and no one dies of starvation, measures are necessary to cope with malnutrition among the rural population which occurs in quite a number of cases as a result of ignorance and lack of balanced diet. Bad food preparation also leads in some districts to liver fluke and other parasitic diseases.

A dieticians' training centre has already been established at Ubol-Rajathani with assitance from FAO and UNICEF and the establishment of a second centre with their assistance is under consideration. The Department of Health will continue its programme of nutrition education and demonstration by means of lectures, film-strips, posters and pamphlets, and the distribution of milk and vitamin capsules to people in need of them.

Iodized salt is already being distributed free of charge at health centres in districts where goitre is prevalent. It is proposed to increase the production of such salt from 400 to 600 tons. Similarly the production of fish-liver oil will be raised from 13 million to 15 million capsules.

14. **Training.** A reference has already been made to the provision for the training of second-class nurse-midwives, local health officers and follow-up health

workers. Provision is also made in the next three years for expanding and improving the training of nurses, nurse-teachers and nurse-aids.

At the nursing training schools attached to the Women's Hospital in Bangkok and to the Phitsanuloke and Nakhonrajasima Hospitals, it is proposed to expand enrolment of nurses from 250 to 300 and of nurse-teachers at the Women's Hospital from 40 to 60. In addition, a new nursing training school is proposed to be established at Songkla Hospital which is sheduled to admit 50 nurse students in 1966, and the establishment of a fifth school at Chandhaburi Hospital is under consideration.

At the nurse-aid training schools attached to the Ubol-Rajathani and the Narathivas Hospitals, it is proposed to give training to 150 nurse-aid students and 10 laboratory-technicians.

At present the two medical colleges at the Siriraj and Chulalongkorn Hospitals are turning out 200-230 graduates annually. A new medical college at Chiengmai started to admit medical students in 1961 and is expected to turn out its first 50 graduates by the end of 1964. Thus during the next three years about 280 medical graduates should be available annually. A proposal to establish another new medical college in the Northeast is under consideration.

15. **Research.** A National Public Health Laboratory is being established where general medical research, research into indigenous medical plants, food and drug analysis and diagnostic laboratory examination will be conducted. A building will be completed in early 1964, for which the major portion of the equipment and scientific apparatus will be supplied with the assistance of the Federal Republic of Germany, while the staffis is to be augmented.

16. **Some Problems of the Public Health Programme.** In Thailand, as in many other countries, a substantial part of the poor rural population does not welcome or readily appreciate measures for the improvement of sanitation and the prevention of disease. To secure their hearty cooperation in such measures is necessarily a slow, up-hill task. The difficulties are aggravated by the lack of well-trained staff to man the health centres and the health services in rural areas. Medical personnel are disinclined to leave the amenities of the towns for residence in remote country districts. The overall shortage of trained staff shows itself most noticeably in the Health Ministry's inability to establish health centres and to provide other health services in rural areas in accordance with the desired targets. Moreover the best use cannot always be made of the available medical personnel owing to the administrative difficulty of transferring staff from one Department of the Ministry to another.

The Ministry is fully alive to these problems, but most of them by their very nature can only be overcome gradually.

Chapter 12

Educational Development

1. The economic and social development of the country will be seriously impeded if the population remains largely uneducated. Educational planning must, therefore, go hand in hand with planning for economic development. Certain basic education has to be provided for all. Beyond this, a modern society requires personnel of varied educational attainments and possessing different kinds of skill. Ideally the number of students completing their education at different levels should correspond with the demand for manpower at those levels at a given period; and so, in order to match to the extent possible the educational attainments required of the available manpower with the ability of the educational system to supply them, educational development has to be closely associated with manpower planning.

2. In Thailand there has been a growing recognition of the importance of manpower problems for economic development, and a manpower planning unit has recently been established in the NEDB whose task it will be, in collaboration with other agencies of Government, to assemble and keep under constant review data in regard to manpower requirements. In this connection a valuable preliminary assessment of manpower demands and the capacity of the educational system to meet them was carried out in August-September 1963 by a joint Thai-USOM task force. So far as educational development is concerned, their principal findings, based on factual data which is admittedly at present rather meagre, are (a) that manpower requirements during the period 1966-1980 will call for a greater out-turn of secondary school graduates than can be supplied under the present educational structure, and (b) that while no serious strain on the university level of education is indicated, there will have to be a major reorientation of university curricula in order to meet Thailand's need for scientific, engineering and professional talent.

3. Almost concurrently with the work of this joint task force, an Educational Investment Programming Mission from UNESCO visited Thailand with a view to identifying and making recommendations regarding educational projects and programmes which, within the broad framework of plans for economic and educational development, might be suitable for attracting the assistance of international financing agencies. This Mission's report is expected very shortly.

4. Within the next few months careful consideration will have to be given to the findings and recommendations of the Thai-USOM task force and the UNESCO Mission. It is possible that, as a result, there will be some shift of emphasis in the Plan for educational development and that some of the projects/programmes will be modified or supplemented, especially if further external finance is forthcoming. In the paragraphs that follow the plan for educational development is presented as it stands at present, unmodified by any fresh thinking that may be provoked by the findings of these two investigating teams.

General Aims of Educational Development

5. A variety of factors must be taken into account in determining the targets for educational development. It is realized that all levels of education are important and closely interrelated. But investment in human capital by way of education entails heavy expenditures and involves a long gestation period. Thus for a developing country with limited resources like Thailand investment in education will have to be made in the cheapest way and in the areas where greatest economic and social benefits can be obtained. Hence it is essential that educational planning be developed in a manner consonant with the economic and social development plan of the country. During F.Y. 1964-1966 in the development of education, 4 broad aims will be kept in view:

(i) In order to give a good elementary education to all boys and girls, the State will strive to improve and expand lower elementary education (Prathom 1-4) so that a higher proportion of children will really learn to read and write; and, in due course of time, to increase the length of compulsory education from 4 to 7 years throughout the country.

(ii) Attempts will be made to improve and expand secondary education so that it may serve as a better and stronger base than at present for the creation of all levels of skills required to meet the urgent needs of the country. Secondary education in the general stream will be expanded and standards improved so that students will be better prepared for education at the university level, for vocational education or for technical training. Private schools will be encouraged to improve their academic standards.

(iii) To make possible effective expansion of education and to raise educational efficiency in general, efforts will be made to produce qualified teachers in adequate numbers, particularly in the field of vocational education.

(vi) Since university-level education is a source of high-level manpower which constitutes a vital asset for the developmental efforts of the country, the State will strive to promote this level of education in all fields in accordance with the country's estimated needs. Projects for expansion of university education envisage that courses should be offered in the fields suited to the particular needs of regional universities of different regions of the country.

Programmes and Projects

6. Primary Education

? a. **The improvement and expansion of compulsory primary education (Prathom 1-4:)** Nationwide compulsory education has long been in operation with the objectives of educating the population to read and write and to become responsible citizens, capable of earning a respectable living. The present rate of population increase of 3% per annum poses serious problems. In 1963 there were 3.98 million students enrolled in Prathom 1-4. It is estimated that in 1964, 1965, 1966, the students enrolled in Prathom 1-4 will be 4.12, 4.27, and 4.41 million, respectively. During 1964-1966, therefore, schools buildings will have to be expanded and constructed to accommodate adequately the increased number of new students and at the same time to provide for the large number who fail to be promoted.

The number of failures in Prathom 1-4 has been estimated to run at a rate as high as 600,000 students per year; in Prathom 1 alone students who fail constitute no less than 30 percent of the total students enrolled in that class each year. Many factors account for the high failure rate in these classes, the most important of which are shortage of qualified teachers, lack of the necessary equipment for teaching and for study, and absenteeism. Corrective measures will have to be taken if educational development efforts are to succeed. In poverty-stricken areas, the Government should provide teachers with adequate teaching equipment and Prathom students with the needed textbooks, even though the provision of such facilities may involve heavy expenditure. The Ministry of Education should be provided with additional staff to make spot check of attendance records, especially among students of Prathom 1 and 2 where the failure rate is higher than in other classes. It is, however, difficult to make available sufficient funds for these purposes.

[t do what?]

The Ministry of Education's projects in the field of primary education to which special attention should be devoted are as follows:-

(1) **Project for the promotion of primary education (Prathom 1-4):** This project envisages the setting up of 200 village schools a year during 1964--1966 in areas where no school exists so that all boys and girls can receive

compulsory education. This project will support the village schools by providing teachers, teaching equipment and textbooks for students.

(2) **Project for the development of regional education:** This project aims at raising the standard of education in various regions of the country by setting up teachers' training centres, promoting education in the border areas as well as coordinating ceosely with community development technical centres.

(3) **Welfare School Project:** Under this project the Ministry of Education plans to set up 2 or 3 welfare schools every year during 1964-1966 to teach children living in forests or on the hills and islets where there are no schools. The Ministry also plans to open schools for the deaf and dumb, one in every region of the country.

b. **Expansion of compulsory education from 4 to 7 years:** This is a project of immense dimension which would entail very heavy expenditure. To illustrate by simple arithmetic, it is estimated that there will be 800,000 students completing Prathom 4 in the academic year 1966 and if only 40 percent of these students were to be admitted to Prathom 5, there would be 320,000 students in Prathom 5 alone. If the nationwide expansion of compulsory education were to be completed in 18 years, about 524,900, 659,400 and 797,400 students would have to be enrolled in Prathom 5-7 in 1964, 1965 and 1966 respectively. The funds required for the expansion of compulsory education alone would be no less than 4,000 million baht per year which would be a serious drain on the Government's budget in view of the fact that the Government already has a heavy burden in improving and expanding lower primary education (Prathom 1-4). Thus it is inevitable that the expansion of compulsory education to 7 years should take place gradually as financial resources permit. The following are the first steps that have to be taken.

[Early do.?]

(1) Expanding the existing lower primary schools or building new upper primary schools (Prathom 4-5) in areas where the 7-year compulsory education has already been enforced to accomodate not more than 200,000 Prathom 5 students per year during 1964-1966.

(2) Providing adequate number of teachers for 934 existing schools which are already teaching Prathom 5-7 as well as for these to be constructed or expanded. Approximately 1,500 new teachers would be required for this purpose by both private and public schools each year.

7. Secondary Education (M.S. 1-5)

Secondary education consists of general lower secondary education (M.S. 1-3), general upper secondary education (M.S.4-5) and vocational secondary (lower and upper) education. The overall development of secondary education will be conducted in the manner described below.

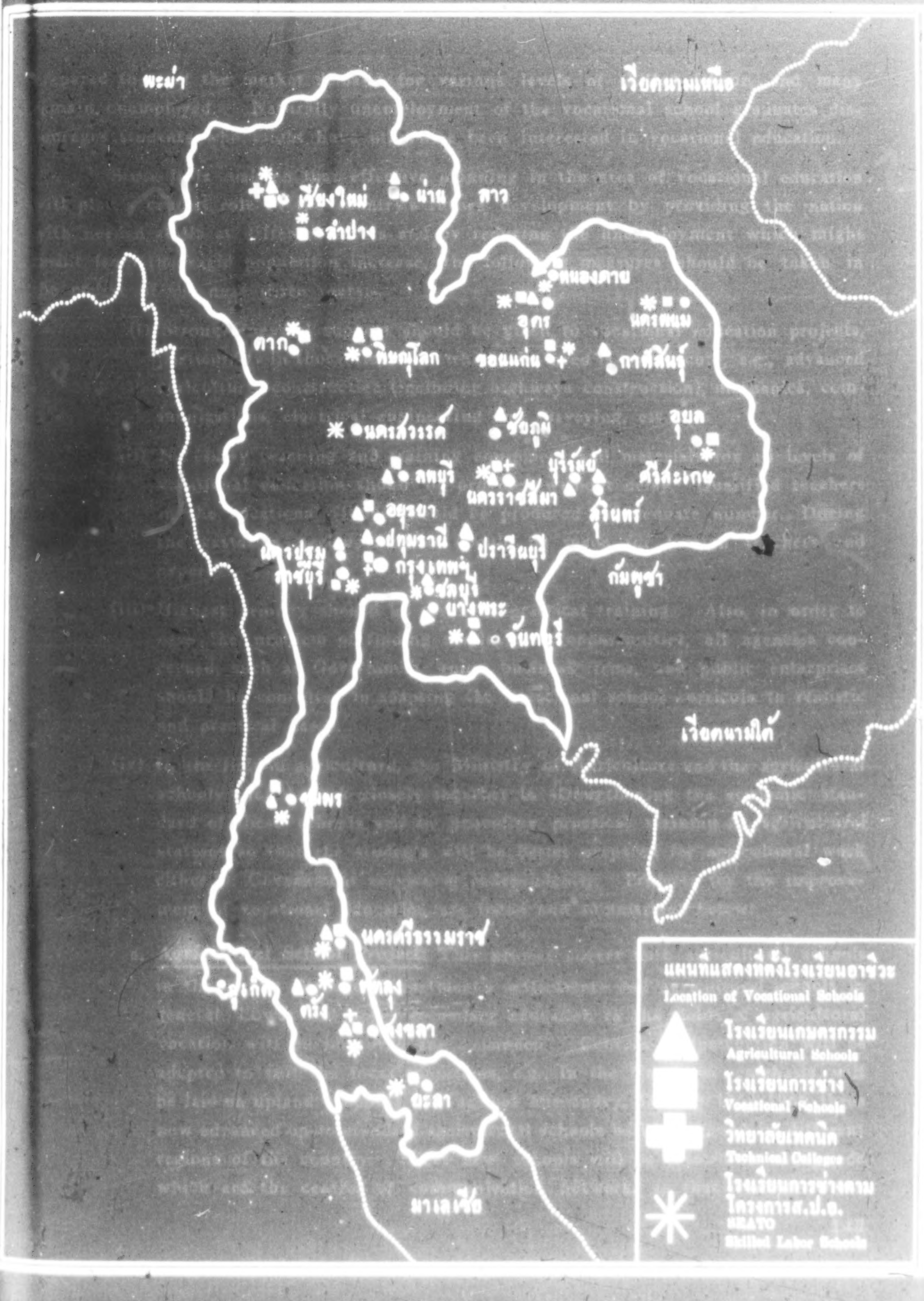
General Secondary Education

In the next three years (F.Y. 1964-1966) improvement of academic secondary education (lower and upper) will involve an increase of qualified teachers and the raising of the academic standard. In particular, the curriculum for M.S. 5 has to be improved to meet the pre-university requirements, and the number of students in this grade at any period should not be allowed to exceed the level that can be accommodated by universities and colleges and by the demand for intermediate-level labour force in that period. In addition, regional secondary education will be expanded. New lower secondary schools in the academic stream (M.S. 1-3) will be opened in major amphurs where they are not currently in existence and upper academic secondary education (M.S. 4-5) will be provided in major changwads where this type of education is lacking, account being taken of the demand for different levels of the labour force. Regional comprehensive schools will be established on a pilot basis and if successful will be permanently integrated with the secondary school system. Finally, the number of regional technical supervisors has to be increased to assist in improving the teaching standard in these schools.

Vocational Secondary Education

At present the number of students enrolled in vocational secondary school stands at only 10% of the total enrollment of all secondary schools. It is even more discouraging to find that the absolute number of students in lower vocational schools has steadily declined since 1958 from 23,257 in that year to 17,561 and 4,900 in 1961 and 1962 respectively. There has also been a slight decline in the number of students enrolled in upper vocational school (M.S. 4-5): from 29,633 in 1961 to 27,011 in 1962. Total enrollment in technical colleges stood at 4,900 in 1961 and 4,761 in 1962.

This poor showing clearly indicates that vocational education has not been very popular among students. A variety of factors account for this, the most important of which is lack of qualified and experienced teachers, of buildings, workshops and other essential equipment and facilities. This handicap necessarily makes the instruction unduly general and not vocational as conceived. Thus students are not sufficiently


พม่า
เวียตนามเหนือ
เชียงใหม่
น่าน
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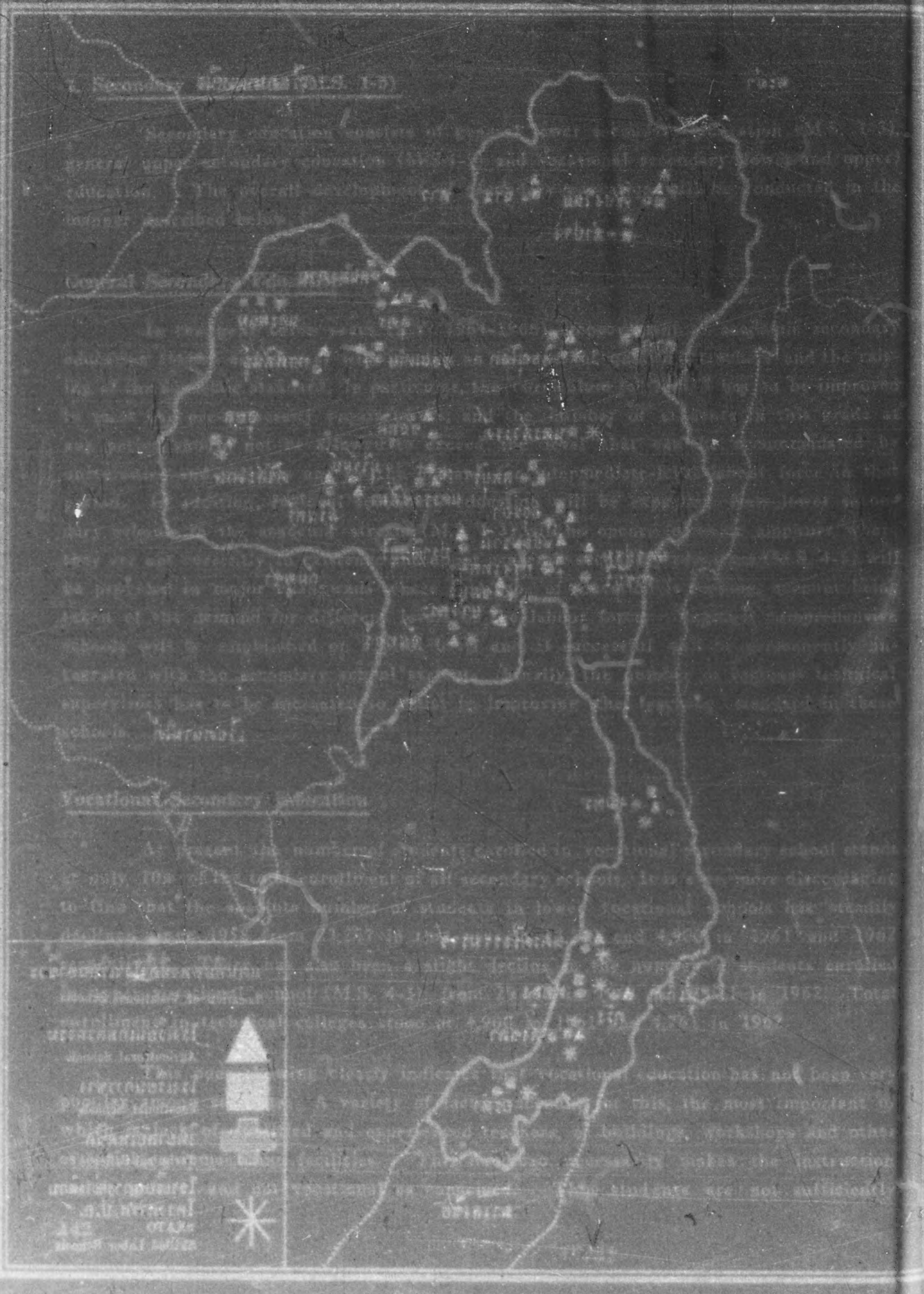
หนองคาย
อุดร
นครพนม
ตาก
พิษณุโลก
ขอนแก่น
กาฬสินธุ์
นครสวรรค์
ชัยภูมิ
อุบล
ลพบุรี
บุรีรัมย์
ศรีสะเกษ
นครราชสีมา
สุรินทร์
อยุธยา
ปทุมธานี
ปราจีนบุรี
นครปฐม
ราชบุรี
กรุงเทพฯ
ชลบุรี
กัมพูชา
บางพระ
จันทบุรี
เวียตนามใต้
ชุมพร
นครศรีธรรมราช
ภูเก็ต
พัทลุง
ตรัง
สงขลา
ยะลา
มาเลเซีย
แผนที่แสดงที่ตั้งโรงเรียนอาชีวะ
Location of Vocational Schools
โรงเรียนเกษตรกรรม
Agricultural Schools
โรงเรียนการช่าง
Vocational Schools
วิทยาลัยเทคนิค
Technical Colleges
โรงเรียนการช่างตามโครงการส.ป.อ.
SEATO
Skilled Labor Schools



prepared to meet the market demand for various levels of skilled labour, and many remain unemployed. Naturally unemployment of the vocational school graduates discourages students who might have otherwise been interested in vocational education.

Since it is realised that effective planning in the area of vocational education will play a crucial role in the country's future development by providing the nation with needed skills at different levels and by reducing the unemployment which might result from the rapid population increase, the following measures should be taken in the course of the next three years:-

(i) Strong financial support should be given to vocational education projects, particularly in those fields for which the need is most acute, e.g., advanced agriculture, construction (including highways construction), mechanics, communications, electrical engineering and surveying, etc.

(ii) Necessary teaching and training equipment and materials for all levels of vocational education should be provided without delay. Qualified teachers in the vocational flields should be produced in adequate number. During the gestation period, request should be made for foreign teachers and experts.

(iii) Highest priority should be given to practical training. Also, in order to ease the problem of finding employment opportunities, all agencies concerned, such as Government units, business firms, and public enterprises should be consulted in adapting the vocational school curricula to realistic and practical needs.

(iv) In the field of agriculture, the Ministry of Agriculture and the agricultural schools should work closely together in strengthening the academic standard of these schools and in providing practical training at agricultural stations so that the students will be better prepared for agricultural work either in Government service or independently. Projects for the improvement of vocational education are listed and summarized below:

a. Agricultural School Project: This project covers both agricultural schools in the Public Welfare Department's settlements and agricultural schools in general. Lower and upper secondary education in the fields of agricultural vocation will be improved and expanded. Courses of instruction will be adapted to suit the local conditions, e.g., in the Northeast emphasis will be laid on upland cropping and animal husbandry. During 1964-1966 three new advanced up-to-standard agricultural schools will be opened in different regions of the country. These new schools will be located in changwads which are the centres of communication networks so that students from neighbouring changwads can easily attend the schools. Some existing agricultural schools, such as those in Nakhornsrithamraj, Surin and Kalasin. will be raised to college status. As for Chiengmaj Agricultural College, which has long been in operation, the courses of instruction will be improved and adjusted to be more in line with those to be adopted by the Faculty of Agriculture of the Northern Region University.

Apart from the general and "welfare' agricultural schools mentioned above, there are "modern' agricultural schools offering 5-month courses to owner-cultivators who are interested in modern cultivating methods. During F.Y. 1964-1966 these 'modern' school will be set up where there are no agricultural schools of either of the two types already mentioned.

b. **Technical college Project:** During F.Y. 1964-1966 the academic standard of technical colleges in Bangkok and Thonburi as well as in Songkla, Nakhornratjsima and Chiengmai will be strengthened. Also in the course of the next three years or more the Ministry of Education contemplates the establishment of two additional colleges, one at Udorn and one at Tak. Subjects which these schools should teach with particular emphasis are mechanics, electrical engineering, construction, surveying and commerce. The most important obstacle to setting up technical colleges is the lack of qualified and experienced teachers. The extent to which technical education can expand depends, therefore, on the country s ability to produce an adequate number of qualified teachers.

A new technical school and a higher institute of Agriculture and Engineering are to be set up at Khonkaen. The new institute is expected to be in operation in 1965 with an initial admission of 60 students to each of the two branches. The institution will be expanded and developed into the University of the Northeast.

c. **Project for Improvement and Establishment of Higher Vocational and SEATO Technical Schools**: During 1964-1966, 4 additional higher vocational schools (the last year of which is equivalent to M.S. 5) will be opened. The standard of all 17 SEATO technical schools (last year equivalent to M.S. 3) now in existence will be raised. Three additional SEATO technical schools of high standing will be established in each region of the country offering courses in construction, mechanics, motor mechanics, metallurgy, electrical engineering, radio repairs, communications, etc.

d. **Project for "Short Training" in Vocational Education:** This project is meant for interested persons who may not have time fully to pursue formal education. Mobile units will be sent to give "short training' in vocational education in different parts of the country.

e. **Vocational Teachers' Training School Project:** Since lack of qualified and experienced teachers at all level of vocational education is the greatest obstacle to the development of this type of education, there is a project for the construction of four high-standard vocational teachers' training schools, one in each region, of which two will be established in the course of the next three years. These schools have to be capable of producing qualified teachers in adequate number to meet the needs at all levels.

The vocational teachers training projects may be classified as short-term and long-term. The short-term project starting from F.Y. 1965 and covering a period of 4 years would involve annual recruiting of 50 students who have finished 5 years and 3 years of secondary vocational education for further training in the proposed new school. These students with 3 years' background will have to undergo 4 years training while the training period for those with 5 years background will be only 2 years. Successful trainees will be posted to teaching jobs in vocational schools. The long-term project proposes to recruit students who have finished M.S. 3 in the general stream for further training for a period of 5 years. It is envisaged that the two vocational teachers training schools to be set up will be able to produce 400 qualified teachers per year. The short-term and long-term teachers' training projects would involve heavy expenditure and, besides, in the initial stage at least 10 foreign experts and 30 qualified Thai specialists will be required for the implementation of the projects.

At present there is also a shortage of qualified teachers in agricultural schools at the upper secondary level. Thus teachers' training at this level is required. Students who have finished their education at higher agricultural vocational schools can be recruited for 2 years of further training for future teaching positions. Graduates from agricultural colleges and Kasetsart University can also be recruited to teach in agricultural schools.

8. Teachers' Training

There are at present 26 teachers' training schools throughout the country with a total number of 1,200 instructors producing 6,000 teachers (2-years course and over) annually. Prasanmitr and Bangsaen Colleges of Education and Chulalongkorn University annually supply 600 B.A. degree instructors who may teach at the teachers' training schools. Yet the number of teachers still falls short of what is needed to allow for the usual replacements and to permit educational expansion to keep pace with the population increase. Improvement and expansion of the teachers' training programme are therefore of high priority. What is needed at present is to shift the emphasis to study of the subject matter which the future teachers will have to teach rather than concentrating merely on teaching methods and auxiliary subjects. Only through this shift can the teachers have academic resources at their disposal to impart to their students.

More certificate-holding teachers will be supplied to the rural areas. Teachers in remote areas who do not have the opportunity to further their formal education will be given in-service training to improve their own resourcefulness and teaching ability. To provide the rural areas with certified teachers will take a long time since it is estimated that there are at present 60,449 teachers at different levels who have not had any regular training.

9. Private Schools

With the number of students rising at an increasing rate private schools have contributed on an ever-increasing scale to national education. This will be evident from the fact that in 1945 enrollment in private schools was only 4.5% of the total enrollment in the country and rose to 12.2% in 1955, and 15.6% in 1960. This trend will continue, the greatest increase being in the number of secondary schools for boys and girls. A pertinent problem here is to maintain the private schools' academic standard at least at the same level as the Government schools. Therefore, during the next three years closer supervision has to be exercised over private schools. In particular they should be encouraged to hire more qualified teachers. Also, training programmes should be organized for teachers in private schools whose training is deficient. Finally, individuals should be encouraged to start private schools of a high standard so as to help relieve the State's burden in the field of education.

10. University-level Education

The current Plan for the economic and social development of the country points to the urgent need for highly-skilled manpower in specialized fields. Accordingly, the Government will devote much effort towards improving university-level education in order to supply both the public and private sectors of the economy with an adequate number if well-trained university graduates in the urgently needed fields, particularly engineers, agriculturists and doctors.

Due to the limited number of buildings, shortage of qualified instructors as well as lack of teaching materials and equipment, coupled with the fact that secondary tion is not up to the standard needed to prepare students adequately for higher educa-education, the present annual enrollment of new students at all the universities is only between 3,800 and 4,000. It is envisaged that in the years 1964, 1965 and 1966 the universities will be able to admit about 4,600, 5.000 and 5,400 new students respectively.

The substantial increase in the year 1964 is due to the opening of 2 new higher institutes, the Chiengmai University and the Northeastern University (at Khonkaen). In 1963, graduates granted degrees in all fields numbered 2,550. It is estimated that the number of students graduating from all higher institutions will increase at the rate of 400 per year during the next 6 years.

Among the different fields of specialized studies, the present urgent need lies in the fields of engineering, agriculture and medical sciences. The 1963 academic year produced a new crop of 240 engineers, 230 doctors and 110 agriculturists. During 1964-1966 the Chiengmai Medical University is expected to supply 50 additional doctors per year. Should foreign assistance be forthcoming for partial financing of the projects for improvement and expansion of these three specialized studies from 1965 onwards, it could be envisaged that by 1969 the number of students graduating in the engincering and agricultural fields will be 200 and 100 higher than at present. Also, 100 more doctors should be graduating by 1971.

The following are some of the important projects in the field of university-level education during 1964-1966.

(1) **Improvement and Expansion of Medical Schools:** Measures will be taken to improve three existing medical school from which about 250 doctors will be graduted each year, namely, Şiriraj Technical School, Chulalongkorn Medical School, and Chiengmai Medical School. The teaching standards and instruction of the medical schools will be strengthened. It is planned to increase the number of graduating doctors by an additional 50 a year in a few years time. Existing hospitals now located in the Victory Monument area in Bangkok will be used for this purpose.

(2) **The Establishment of Chiengmai University:** Construction started in F.Y. 1963 and the University will begin its operation in the 1964 academic year. At the initial stage only 3 departments will be opened: Engineering, Sciences and Social Sciences admitting only 300 new students each year. These students are expected to complete their studies in the academic years 1967 and 1968. Chiengmai Medical College will be transferred to the University as its Medical Department in 1964.

(3) **The University of the Northeast:** The University will begin its operation in 1964 opening at this stage only 3 departments: Agriculture, Engineering and Science. In 1964 the first class of 120 students will be admitted who will be temporarily put in the Department of Medical Science and then moved to a permanent place in Khonkaen in 1965. Apart from budgetary funds which will be the major source of finance, assistance from New Zealand and Canada will be requested to finance the estblishment of the Agricultural and Engineering Departments respectively.

(4) The Institute of Development Administration: The purpose of this Institute is to provide education and training and to conduct research in matters concerned with the country's development. At the initial stage 4 branches will be opened for instruction:-

a) Public Administration at the graduate level. The work of the Institute of Public Administration in Thamasart University will be transferred to the new Institute.

b) Business Administration at the graduate level.

c) Applied Statistics. The work of the National Statistical Office in this field will be transferred to the new Institute.

d) In-service and pre-service training courses in Economic Development for government officials, this work being transferred from the Office of the National Economic Development Board.

(5) Improvement and Expansion of the Engineering Faculty of Chulalongkorn University: During the year 1965-1966 a more adequate number of qualified teachers, teaching and workshop materials and equipment will be provided to improve the teaching standards and workshop practice. Since it is contemplated to increase the number of students graduating each year from this University by 200 by the next 5 years, the construction of classrooms, laboratories, workshops and other necessary facilities as well as the provision of qualified teachers for this purpose will have to be started in 1965. The United Kingdom may give some assistance in the implementation of this project.

(6) Improvement and Expansion of the Faculty of Agriculture of Kasetsart University: This is a five-year programme starting from the year 1965 with a view to raising the number of students graduating each year by 100 by 1970. Thus more instructors and adequate facilities such as school buildings, laboratories, workshops, etc., will have to be provided to meet the needs of the increased number of students. More emphasis will be given to agricultural research.

(7) Improvement of the Faculty of Science: Since the study of science is a prerequisite to the study of engineering and medicine, it is essential that the Faculty of Science of the Chulalongkorn University and of the Faculty of Medical Science be improved and expanded as preparatory measures for the contemplated expansion of engineering and medical studies outlined above.

(8) **Improvement of Teachers' Colleges:** At present institutions producing degree-holder teachers and instructors are Prasanmitr Colleges at Pathumwan and Bangsaen. and the Faculty of Education of Chulalongkorn University which together supply 600 bachelor's degree-holder instructors each year. These instructors are teaching in various teachers' training schools, but they have not been able to produce teachers to meet adequately the demand from upper secondary and pre-university schools. During 1964-1966, therefore, these teachers' colleges will be improved by strengthening the academic standard with special emphasis on the subject matter of particular fields with which the potential teachers will be concerned, while teaching methods will also not be neglected. The expansion of the number of teachers produced each year will be done gradually after the academic standard and teaching methods have already been improved.

11. Past Performance and Future Outlook

The extent to which the programme and projects for the improvement and expansion of university-level education will be successful depends upon how far existing problems and deficiencies can be solved and overcome. One of the important deficiencies is lack of qualified university instructors with the result that recourse has to be had to an excessive number of part-time instructors which, in turn, necessarily leads to a low academic standard at the universities. Another problem is the duplication of work: the same courses are being taught by more than one faculty and university. Also, courses offered by some faculties are not properly arranged and some are not of much value in terms of the economic needs of the country. Finally there exists in general a lack of coordination of work among different universities and colleges. The correction of these deficiencies would go a long way towards the development of this level of education.

As for education at lower levels the experience of the last three years shows that the developmental efforts in these areas have met with some success. Yet the standards of education at these levels are not as high as they should be. The bottleneck is again the lack of qualified teachers, teaching materials and equipment as well as school buildings. The Government has realized and appreciated this problem with the result that budgetary funds have been allocated for the development of education in an ever-increasing proportion.

It can be foreseen that 20 years hence Thailand will enjoy an educational system no less efficient than that of other countries. It is hoped that by that time the 7-year compulsory education system will have been enforced throughout the country. Vocational education will be particularly emphasised and the education system will be closely related to the economic framework of the nation.

13. Expenditure for the Development of Education

To finance the educational development projects, Budgetary funds, foreign grants and foreign loans will be utilized. Since the details of individual projects are still in the process of being revised and adjusted, it is not possible at this stage to present the expenditure estimates by projects. Thus development expenditure estimates only by broad categories and financing sources are presented in the tables below.

Table 1

NATIONAL BUDGET EXPENDITURES, F.Y. 1964-F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
1. **Universities**	130.80	146.83	172.38	450.00
a. Chiengmai University	25.62	32.63	36.25	94.50
b. Northeastern University	15.00	15.00	12.00	42.00
c. Kasetsart University	8.43	9.27	10.20	27.90
d. Chulalongkorn University	28.98	31.88	35.07	94.93
e. Thamasart University	10.70	11.77	12.95	35.42
f. The University of Medical Sciences	39.32	43 25	47.58	130.15
g. Silpakorn University	2.75	3.03	3.33	9.11
h. Institute of Development Administration	-	-	15.00	15.00
2. **Ministry of Education**	210.03	232.27	256.93	699.23
a. Office of the Under Secretary	3.07	3.87	4.86	11.80
b. Kindergarten, Primary and Welfare Education 7:1	Why Elem. big increase from 1962? 127.68	140.45	1966 exceeds 1964 by 154.50 +20%	422.63
c. Secondary Education altho in 1962 only 2+:1	19.38	21.32	23.45 +20%	63.15
d. Vocational Education	36.94	49.37	58.33 +66%	144.64
e. Teachers' Training small!	22.96	25.26	27.79 +20%	76.01
Total	340.83	387.10	441.31	1,169.24

Table 2

FOREIGN LOAN DISBURSEMENTS, F.Y. 1964-F Y. 1966

(In millions of baht)

Item	1964		1965		1966		Total	
	Local Currency	Foreign Currency	Local Currency	Foreign Currency	Local Currency	Foreign Currency	Local Currency	Foreign Currency
1. Universities	-	-	41.50	24.00	40.50	24.00	82.00	48.00
2 Vocational Education	-	-	20.00	37.00	93.40	152.20	113.40	189.20
Total	-	-	122.50		310.10		432.60	

Table 3

FOREIGN GRANTS, F.Y. 1964 - F.Y. 1966

(In million of baht)

Item	1964	1965	1966	Total
United States	33.00	41.00	40.00	114.00
a. Development of Regional Education				
b. Vocational Education				
c. Chiengmai University				
d. Chiengmai Medical School				
United Nations Special Fund	3.60	3.40	2.50	9.50
a. Thonburi Technical Institute				
United Nations (UNESCO)	3.00	3.00	3.00	9.00
Colombo Plan	14.00	14.00	14.00	42.00
a. University of the Northeast (New Zealand, Canada)				
b. Improvement of Engineering Faculty Faculty, Chulalongkorn University (U.K.)				
c. Others				
Other Sources	6.60	9.90	13.20	29.70
a. Establishment of Khonkaen Technical School (Germany)				
b. Improvement of Northern Bangkok Technical College (W. Germany)				
c. Improvement of Engineering Laboratory, Chulalongkorn University (Switzerland)				
d. Establishment of Tak Technical College (Sweden)				
e. Improvement of Kasetsart University (Rockefeller Foundation)				
f. Establishment of Institute of Development Adminstration (Ford Foundation)				
Total	60.20	71.30	72.70	204.20

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Table 4

TOTAL ESTIMATED EXPENDITURES, F.Y. 1964-F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
Budget	340.83	387.10	441.31	1,169.24
Foreign loan disbursements	-	122.50	310.10	432.60
Foreign grants	60.20	71 30	72.70	204.20
Total	401.03	580.90	824.11	1,806.04

The expenditures for the development of education during the next three years are estimated to total 1,806.04 million baht. Roughly corresponding expenditures during 1961-1963 came to 685 million baht. Despite the sharp increase in anticipated expenditure the sum still falls short of the requirements for fully implementing the projects in order to accomplish the planned targets. Thus attempts will be made to approach foreign lending agencies such as IDA for low or non-interest loans. It is estimated that 432 million baht in foreign loans will be required for the next three years in addition to 204 million baht in foreign grant assistance.

Chapter 13

The Development Role of State Enterprises

1. The role of state enterprises is highly important to Thailand's economic development. The state enterprise sector accounts for a significant proportion of the domestic resources available for development and a large share of the total public development spending programme. Development outlays of nearly 1.5 billion baht will be made by this sector during 1964-1966 out of its own resources, a sum representing about 10 percent of the total domestic resources that are expected to be available for public development spending during this period. Furthermore, including anticipated Budget appropriations and disbursements of foreign loans and grants, and their own funds, the state enterprises are expected to spend approximately 4.8 billion baht during the same period, or a little less than a fourth of the total 20.3 billion baht planned development expenditure.

2. As defined in the National Economic Development Board Act (1959 as amended by the Act of 1960), a state or public enterprise is a company or corporation in which majority equity interest is held by the Government of Thailand. By this definition, there are at present 108 state enterprises; in addition, the Government has minority holdings in 19 other business concerns. The quasi-independent government organizations include the public utilities and a variety of industrial, commercial and financial enterprises whose investments and operations are financed in whole or in part through Budget appropriations (grants and loans), reinvested earnings, and foreign and domestic borrowings. Some of the state enterprises make large or small annual contributions out of earnings to the Budget; the state enterprises also contribute to Government revenues by paying business taxes and customs duties.

3. The resources and expenditure data on state enterprises which are contained in the National Economic Development Plan cover only forty-five of the total number, but in terms of scale of operations and capital investment these are of the most importance to development. The remaining enterprises are not considered for one or more of the following reasons:-

a. The enterprise is essentially a financial organization.

b. The enterprise is not directly concerned with economic activities.

c. The capital investment is small (less than 1 million baht).

d. The information available is inadequate.

4. The estimates and data in this chapter refer to state enterprises that were in existence at the end of 1963, with the exception of the National Telecommunication Organization which was to be established in 1964. Proposed new state enterprises, such as the National Power Authority and the National Waterworks Authority, are not included.

Policies

5. Government investment in the state enterprises during the first three years of the Plan (1961-1963) has contributed more towards the economic development of the country than in previous years. This is primarily because the Government has imposed statutory and other controls on their investment expenditures from their own earnings, foreigns loans, annual Budget appropriations, and other sources. All state enterprises are required to abide by the Regulation on State Enterprise Finance and Account (1961) which standardize the method of controlling accounts and investment expenditures. Moreover, the regulations require that they submit their proposed investment programmes to the National Economic Development Board for review in accordance with the NEDB Board Act of 1960. The investment expenditures of the 45 enterprises which were approved by the Government during 1961-1963 approximated 3,897 million baht. These expenditures enabled most state enterprises to increase their production, thereby benefiting the economic development of the country.

6. In the second phase of the National Eeconomic Development Plan, emphasis will be placed upon improving the efficiency of the state enterprises and upon expanding the capacity of those enterprises that can and will play a significant role in furthering economic development objectives. Steps will be taken to develop appropriate measures, to improve production and marketing techniques and to increase efficiency in management and operations in order to ensure that investments already made or being added will benefit the country and will not go to waste. They will be encouraged to be more financially self-sufficient and to become less a burden on the national Budget. The aim is not only to operate at a profit, but to consider also the effect on the economy and the quality of their services to the public. Nor is it intended to enter into competition with private enterprises. Indeed, the policy is to promote, encourage and accelerate industrial investment by the private sector. In line with these aims, the Government is prepared even to operate, particularly public utilities, at a loss where it benefits the public. The Government is also willing to consider seriously reasonable offers from private investors for lease or purchase of its industrial enterprises. However, those industries and undertakings with are of the most vital importance to the national interast will be retained in the public sector.

7. The activities that will be carried on by state enterprises include:-

a. The production of armaments and other military and strategically important defence supplies;

b. The generation and distribution of electric power, the railways and ports, the postal and telegraph services and other telecommunications;
c. The promotion of tourism and of other activities that are important foreign exchange earners and contribute significantly to the national income;
d. The production of cigarettes, alcohol, playing cards, and certain other goods which, if not undertaken by the Government, would give rise to tax evasion and a consequential sizeable loss of Government tax revenue;
e. The production of goods, particulary those important to the national interest, which require large initial investments and thereby are not attractive to private investors; and
f. The preservation of the national cultural heritage including the national arts, such as traditional music and dancing.

Methods of Policy Implementation

8. A number of Government Department and Agencies are directly or idirectly concerned with the activities of state enterprises. These include, in addition to the directly responsible minstries, the National Economic Development Board, the Ministry of Finance, the Budget Bureau, and the Advisory Commitee on Government Organization. To implement the policies stated above requires improved coordination and the closest cooperation among these and other interested Agencies. To achieve Government objectives:-

a. The National Economic Development Board will serve as the coordinating agency in respect to the future investment plans and operations of the state enterprises.
b. The state enterprises will be expected to prepare long-term investment programmes integrated with production and marketing plans.
c. The operations and performance of the state enterprises will be studied and evaluated in relation to established goals; moreover, the capability of each state enterprise to lower production costs, to increase operating income, and to raise quality to desired international standards will be appraised.
d. The desirability of continuing state enterprises that are not financially self-supporting but depend on annual Budget appropriations, will receive painstaking study. If a state enterprise is to be discontinued, the means b which this can best be accomplised, i.e., by liquidation or amalgamation with other enterprises, or by sale or lease to the private sector, will be given the most careful study.
e. Consideration will be given to the advisability of combining state enterprises performing similar or related function into central organizations.

f. Before a new state enterpris is established, particularly one involving large investment expenditures, it is necessary to survey the existing and prospective market for its products or services, the sources of supply for raw materials, manpower, communications, power, and other factors. To avoid being in competition with the private sector, it is essential to consult with the Board of Investment, the Industrial Finance Corporation of Thailand, and other relevant bodies.

g. To assure that the management of the state enterprises is of high standard, the qualifications of top officials being considered for appointment will be most assiduously scrutinized. Orientation courses will be conducted for key operating and administrative personnel to provide them with a better understanding of the Government's economic development programme and objectives and of their relationship to it. They will also receive technical advice, as may be required, on methods for improving operating procedures in line with Government objectives.

h. The organizations which control and supervise the state enterprises will need to set forth clearly the principles covering investment policy and the desired operating procedures, including accounting methods revenue and expenditure control, inventory control, reporting methods, and so on. Existing regulations will need to be examined, and where they create impediments to efficient operation measures will need to be taken to remove or improve them.

Production Gains and Targets

9. Based on actual and estimated production data and other measures of economic growth available for certain state enterprises, significant gains were achieved, though not uniformly, during the first half of the Six Year Plan, as high-lighted by sector below and presented in Table 1:-

a. **Agriculture** – The Rubber Plantation Organization and the Forest Industry Organization experienced respective increases in gross sales value between 1961 and 1963 of 59 percent and 7 percent; the Cold Storage Organization and the Fish Marketing Organization showed little or no growth in sales volume.

b. **Transport and Communications** – The State Railways, Port Authority, and Thai Airways had gains varying from 5 percent to 21 percent in passenger and freight carried or handled, and the Telephone Organization increased its subscribers by 58 percent in the Bangkok-Thonburi area and by 26 percent in other areas.

c. **Power** – The installed generating capacity of the four energy producing state enterprises was about 26 percent higher in 1963 than in 1961 increasing from approximately 264 thousand kw. to 334 thousand kw. .

d. **Industry** – Industrial state enterprises had estimated increases in physical of between 12 percent and 194 percent, with as many as 10 enterprises estimated to have gains exceeding 50 percent.

10. During the second half of the Plan period, gains in output and capacity are expected to be more extensive and more pronounced for some state enterprises than for others. For some, development projects of a long-term nature that were begun prior to 1964 will be completed and begin to yield returns. For others, projects that were completed during 1961 - 1963 will contribute to increased output. Furthermore, improvements in the administration of state enterprises should lead to increased efficiency and fuller utilization of existing capacity with consequent production increases. The gains that are projected by 1966, compared with 1963, are set forth in Table 1 and are summarized below, by sector:-

a. **Agriculture** – Gross sales in 1966, are expected to be higher than in 1963 for the state enterprises in this sector, with the Cold Storage Organization experiencing an increase of 43 percent during the three-year period, the Fish Marketing Organization 33 percent, the Rubber Plantation Organization 14 percent, and the Forest Industry Organization 8 percent.

b. **Transport and Communications** - Gains of 5 percent to 19 percent in passenger and freight haulage are anticipated for the State Railways, Port Authority, and Thai Airways. Smaller gains than during the two years 1962-1963 are anticipated for the Telephone Organization which, by the end of 1966, is expected to have a third more subscribers than in 1963, in the Bangkok-Thonburi area and 16 percent more elsewhere.

c. **Power** – Installed generating capacity in 1966 is expected to exceed 568 thousand kw. or 70 percent greater than in 1963.

d. **Industry** – The range of production increases anticipated from 1963 to 1966 is roughly as wide as between 1961-1963. The Weaving Organization, Thai Plywood Co. Ltd., and the Battery Organization are expected to have the greatest increases. Other enterprises with expanded capacity are likely to show sharp gains, whereas still others, whose expansion programmes under the Six Year Plan have been completed, may be expected to experience smaller gains when compared with 1963.

Development Spending

11. As noted in section 1, the state enterprises are expected to plough back approximately 1.5 billion baht for development purposes during 1964-1966. This sum is about equal to the amount reinvested by them during the first half of the Develop-

ment Plan period. Moreover, it represents about 31 percent of the 4.8 billion baht of development spending projected for 1964-1966 on the part of the state enterprise sector. Budget financing would provide less than 30 percent of the 4.8 billion baht total, and available and anticipated foreign loans and supplier credits the remaining 40 percent. The anticipated financing of the development expenditures of the state enterprises is presented, by sector and year, in Table 2.

12. While attention has directed in previous chapters to various development projects of the state enterprises, a more comprehensive summary of major development projects of this important subsector of the Government, with particular emphasis on those undertakings to be financed by the state enterprises out of their own earnings, is presented in the sections that follow.

13. In the agricultural sector an estimated 80 million baht of reinvested earnings is likely to be utilized during 1964-1966 along with 42 million baht in Budget funds. This is in contrast to the experience during 1961-1963, when the estimated reinvestment amounted to 114 million baht and the Budget appropriated 26 million baht.

a. **The Fish Market Organization.** This state enterprise during 1961-1963 made improvements in fish marketing in Bangkok by expanding the first auction yard and the sea-water fish auction hall. Further, a fishing boat wharf at Smutsakhorn and at Rayong and water storage facilities at Nakornsrithammaraj and at Ampur Banlaem in Phetburi province, were constructed. The quayside at the Bangkok fish market will be extended during 1964-1966 an additional 945 square metres, thereby providing more berthing space for deep water fishing boats. It is expected that the commercial fish catch will increase 1,300 tons annually and that the increase in value will be about 36.5 million baht per annum.

In addition, public fishing ports will be constructed at Songkla Ranong, Trad, Hua Hin, Kloong, Sataheep, Pranburi, and Smutsakhorn. These will not only greatly assist fishermen in the sale of their catch but should help protect them from being forced to sell their catch at unfavourable prices. The construction of the port at Bangkok, Songkla Ranong and Trad will be financed from Budget appropriations. Annual fish loads going through these four ports are expected to be about 90,220 tons, having an estimated value of about 161 million baht.

b **Rubber Plantation Organization.** The Organization expects to use about 350,000 baht per annum from its own earnings and 1.5 million baht in Budget funds on plantation programmes covering rubber plots totaling 4,951 rai. Moreover, approximately 165,000 rubber trees will be grafted and budded. After 1965, the grafted trees trees will be able to yield latex and income from these trees will be used to graft, bud, and replant other rubber trees. The annual planting by the Rubber Plantation Organization of 3,200 rai with superior high-yielding rubber seed varieties, which was under way during 1961-1963, is scheduled for completion by the end of 1966.

c. **Forest Industry Organization.** This state enterprise has obtained concessions to cut teak and yang throughout the country. Additional equipment and machinery will need to be acquired to enable this state enterprise to cope with the increased volume of work. Five regional offices at Chiengmai, Tak, Phitsanulok, Phrae, and Surathani will be set up to plan and direct wood cutting operations. An estimated 72 million baht will be reinvested during 1964-1966 on these and other activities. The Ministry of Agriculture exercises general supervision over the work of the Forest Industry Organization in order to make sure that the forests being cut are also properly conserved.

d. **Cold Storage Organization.** The construction of this organization's 200-ton cold storage plant, which was under way during the first half of the Plan period, is expected to be completed during the second half.

14. In the transport commuuications sector, about 712 million baht of estimated development expenditure during 1964-1966 will be financed by the state enterprises out of ploughed back earnings and 1.6 billion baht is expected to come from Budget appropriations and foreign loans. During the first half of the Plan, the latter provided 270 million baht and reinvested earnings came to approximately 661 million baht.

a. **The Port Authority of Thailand.** During 1961-1963 the Port Authority of Thailand improved its facilities for handling vessels and cargo by dredging the Choa Phraya estuary channels from the river-mouth to the part area and by acquiring and installing more equipment. The channels are designed to have a reasonably constant depth enabling large vessels with more than 28 feet of submerged bottom or of 10,000 tons to enter, to berth, and to turn at the port, even at low tide. As indicated elsewhere in this document, the Port Authority will continue to expand and improve its freight handling and storage facilities. A central goods yard will be constructed and warehouse facilities will be enlarged. The Port Authority is expected to reinvest over 111 million baht during the nex three years in its facilities expansion and improvement programme.

b. **State Railways of Thailand.** This public enterprise during 1961-1963 increased its motive power by acquiring 25 new engines and 5 spare engines to handle the increase in its rolling stock. Expansion and construction of both large and medium-sized station yards, and of 27 berth tracks and 14 station was undertaken. Bidding took place for the purchase of 70-1b rails and knots to replace the old 50-1b weight of the Southern lines. In the Northern, Eastern and Southeastern lines, 47 percent of the total scheduled work on transforming wooden bridges into more permanent bridges capable of carrying 15-ton axle loads was accomplished.

During the coming three years the State Railways will purchase 1,005 more freight carriages in order to be able to handle the increasing volume of agricultural and industrial products being transported by rail. Work started in 1963 on eleven large and medium sized station yards, namely, at Bang Sue, Mae Nam, Nakhornsawan, Sila Art, Uttaradit, Haadyai, Denchai, Jira Road, Suratthani, Yala and Toongsong, will be continued. The replacement of existing rails and knots by the 70-1b weight will take place at Prachuap-khirikhan, Nakhornsrithamrat and Songkla, making a total of 651 kilometres. Construction will continue of 15-ton axle load bridges, a programme started in 1963. Moreover, 35 diesel engines, 650 freight cars, 65 passenger cars, and 10 sets of diesel railcars will be purchased. The State Railways investment programme during 1964-1966 to be financed out of reinvested earnings is calculated at 341 million baht.

c. **Telephone Organization.** The Telephone Organization of Thailand will vastly increase its services during the next three years, spending 198 million baht out of retained earnings on expansion of facilities. It is expected that 11,500 installation applications will be satisfied in the Bangkok-Thonburi area and that telephone communications will be extended to the provinces, with work starting in three zones, the first from Bangkok to Saraburi, the second from Bangkok to Arun Yapradesh and Chanthaburi, and the third from Saraburi to Nongkai and from Korat to Ubolrajthani. Work will also be started on two more zones, from Saraburi to Chiengmai, and from Bangkok to Petchburi, Suratthani, Haadyai and Puket. These five zones are in the National Telecommunications plan. Radio-phones will be installed at Pattani, Yala and Narathivas, which are areas outside these zones and will be linked with Bangkok and Malasia through Haadyai. Old cables and equipmen have been replaced in the Bangkok-Thonburi areas in close cooperation with the street expansion projects of the Municipal authorities and the new construction projects of various Government Agencies.

d. **Express Transport Organization.** During 1961-1963 the E.T.O. replaced out of its own earnings 75 sets of tractor semi-trailers and 50 buses by new purchases. Further procurement of bus replacements will be handled by a new bus company under an approved reorganization programme. E.T.O will continue with its truck replacement programme which will be financed partly from earnings (6.8 million baht) and partly from Budget appropriations (13.5 million baht).

15. State enterprises in the power sector are expected to utilize 244 million baht of their funds to further the expansion and improvement of Thailand's electricity network during 1964-1966. Additional financing of 1,148 million baht is expected to come from the Budget and foreign loans. This sector during 1961-1963 used past earnings estimated at 344 million baht and about 1.8 billion baht in Budget and foreign funds.

a. **Provincial Electricity Authority.** This state enterprise distributes and sells electric power, which is produced by diesel generators, to areas outside the jurisdiction of the Metropolitan Electricity Authority. During 1961-1963 it extended its sales to amphurs, sub-amphurs and other rural localities not otherwise supplied with electricity. Within the next three years many additional generating plants, generally of small sizes, are to be established in rural areas. Transmission lines will be constructed to carry power from the Lignite Electricity Authority to the eight southern provinces, and to carry Yanhee Electricity Authority power to 14 other provinces in the Yanhee distribution area and to the Northeast.

b. **The Metropolitan Electricity Authority.** This Authority distributes electricity in the Bangkok metropolitan area (i.e., Bangkok, Thonburi, Nonburi, and Smutprakarn) to which it was able to extend its services to 9,600 new consumers per year during 1961-1963. It will distribute power from the Bhumipol Dam in 1964. The conversion of the voltage system from 110 volts in the Bangkok metropolitan area is expected to be completed in 1967.

c. **The Yanhee Electricity Authority.** The second phase of the Yanhee project will be implemented during 1964-1966 requiring an expenditure of 213 million baht, of which 53 million will come from retained earnings and the balance from Budget appropriations and the World Bank. The money will be used for installing a second 230 kv circuit between Yanhee and Bangkok. This will improve the efficiency and certainty of the transmission system. The Authority will lay down additional 69 kv transmission lines and one 115 kv line, and will build sub-stations in various provinces.

d. **The Northeast Electricity Authority.** The N.E.A. was established in 1963 and given responsibility for constructing the Nam Pong Dam hydro-electric plant. The generators at Nam Pong and Nam Pung with respective capacities of 25,000 kw and 6,300 kw will be constructed during 1964-1966. The N.E.A. will also build a transmission system in eight northeastern provinces and will take steps to tie in two additional provinces.

e. **The Lignite Authority.** The Lignite Electricity Authority sold electricity during 1961-1963 to consumers in Chiengmai, Lampang and Lampoon provinces. It built a thermal electricity plant at Krabi with a generating capacity of 40,000 kw and will start selling power from this source at the end of 1964. It expects to spend 10.5 million baht out of earnings on capital projects during the second half of the Six Year Plan.

16. The industrial state enterprises are expected to invest about 369 million baht in earnings to finance the execution of development projects during 1964-1966, compared with 319 million baht during the preceding three fiscal years. Budget support of 235 million baht is anticipated, while foreign loans and credits may be expected to finance an additional 230 million baht of development expenditure. During 1961-1963 Budget appropriations reached 306 million baht and 10 million baht came from foreign sources.

a. **Weaving Organization.** The Bangkok factory of this state enterprise began an improvement programme during 1961-1963 which will be continued into 1964-1966. Expenditures will probably be around 8 million baht and will be self-financed. A new factory capable of producing 6.2 million square metres of textiles, being constructed at Pitsanuloke, will be financed from Budget appropriations.

b. **Glass Organization.** The neutral glass project of this state enterprise, to be financed out of earnings amounting to 4.5 million baht and capable of manufacturing 5 tons per day of scientific, medical, and technical glass products, will be started during the second half of the Plan period. Other projects of this state enterprise to be undertaken during this period will cost in excess of 15 million baht.

c. **The Northeast Gunny Bag Ltd.** This enterprise spent 19.4 million baht of its earnings during 1962-1963 in procuring and installing additional machinery in order to expand productive capacity from 30,000 to 50,000 bags per day. About 38 million baht of earnings are expected to go into this programme during the second half period of the Plan.

d. **The Gunny Bag Factory (Bangkasor).** This Ministry of Industry state enterprise has employed 14 million baht of earnings during 1961-1963 to finance expansion in production capacity and will spend an additional 28 million baht of its own resources for this purpose in 1964-1966. Its aim is to increase annual production from 6 million to 10 million bags.

e. **The Thai Tobacco Monopoly.** During 1961-1963 annual production was increased by 1,000 million cigarettes in the three factories belonging to this state enterprise. A new factory will be built during 1964-1966 replacing an obsolete one, and other improvements will bring total investment expenditures, all self-financed, to 182 million baht.

f. **Other industries.** Construction of the 20-ton daily capacity Ban Pong plant of the Preserved Food Organization, which was started during the first half of the Plan period, will be completed. The Battery Organization's battery container project, designed to produce 200 units per day, will get under way. Other state enterprises with capital investment programmes during the second half period include the Tanning Organization, National Economic Development Corporation, the Playing Card Factory, Ayuthya Liquor Distillery, the Thai Plywood Company, and the Thai Sugar Organization.

17. In the commerce sector three state enterprises are expected to be able to invest about 76 million baht out of earnings for capital improvements in the transport and marketing of petroleum products and for other purposes. These enterprises are are the Fuel Oil Organization, the Warehouse Organization, and the Marketing Organization.

18. **Promotion of Tourism.** To develop tourism further the Government plans to allocate 21.5 million baht in Budget funds during the next three years to the Tourist Organization of Thailand (TOT), a state enterprise. This is a more than 90 percent increase over 1961-1963 in the Government financial support afforded to this organization.

In recent years, as the result of the promotional efforts by the Tourist Organization of Thailand, airlines and private travelling and tourist agencies, Bangkok has gained prominence as one of the most attractive trourist centres on the Far Eastern route. Foreign visitors to Bangkok increased from 62,000 in 1959 to approximately 150,000 in 1963. First-class hotel accommodations have increased from 858 to 1,687 rooms during the same period. Applications to build additional first-class hotels promising a total of 1,500 more rooms have been approved by the Board of Investment and will help meet the growing demand of the tourist trade. Foreign exchange earnings from tourism rose from an estimated 155 million baht in 1959 to approximately 420 million baht in 1963.

Tourism is still in its early development in Thailand and with proper promotional programmes can be considerably expanded. Increasing attention should be given to the training of hotel and restaurant personnel, and of travel guides and others who provide the services and amenities expected by tourists. Apart from developing foreign tourism, it is desirable to concentrate more fully on a programme for opening up the country to the people of the Thailand through organized visits to places of natural beauty, archaeological, historical and religious interest. Comfortable and inexpensive hotels and rest houses and other facilities will need to be provided and will help bring together people from different regions and develop a greater understanding of their problems and viewpoints.

Table 1

PRODUCTION AND OTHER ECONOMIC GROWTH MEASURES OF SELECTED STATE ENTERPRISES BY SECTOR, ACTUAL 1961, ESTIMATED 1963 AND 1966

Item	Unit	C.Y. 1961 Actual	C.Y. 1963 Estimated	C.Y. 1966 Estimated	Percent Change	
					1961-1963	1963-1966
Agriculture & Cooperatives						
1. Gold Storage Organization	(Gross Sales) million baht	10.17	10.50	15.00	3	43
2. Forest Industry Organization	”	221.77	236.27	255.00	7	8
3. Fish Marketing Organization	”	2.62	2.64	3.50	-	33
4. Rubber Plantation Organization	”	3.56	5.67	6.50	59	14
Transport and Communications						
1. State Railways	Pass/km (million)	2,319	2,568	2,827	11	10
	Ton/km (million)	1,376	1,498	1,686	9	13
2. Port Authority	Tons					
Imports (excl. oil)	(000)	993.5	1,207	1,320	21	10
Exports	(000)	3,370.0	3,600	3,964	7	10
3. Telephone Organization						
Bangkok-Thonburi	No. of subscribers	29,500	46,500	62,000	58	33
Other areas	”	20,552	25,902	30,000	26	16
4. Thai Airways Co.	Pass/kw (000)	28,612	29,962	31,331	5	5
	Ton/km (000)	306	365	435	19	19
Power						
Four electricity authorities	kw of installed capacity	264,470	333,800	568,100	26	70
Thermal	”	135,000	203,800	243,800		
Hydro	”	-	-	241,300		
Diesel	”	129,470	130,000	83,000		

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Item	Unit	C.Y. 1961 Actual	C.Y. 1963 Estimated	C.Y. 1966 Estimated	Prercent Change	
					1961-1963	1963-1969
Industry						
1. Fang Oil Refinery	barrels	13,000	16,000	200,000	23	
2. Weaving Organization	metres					29
Raw cotton	(000)	1,460	1,830	9,400	71	192
Others	(000)	420	1,390			
3. Tanning Organization						
Finished	sq. ft.	814	1,023	1,200	25	17
Others	kg (000)	95	160	174	98	9
4. Glass Organization	ton	8,631[e]	19,800	22,000	130	11
5. Battery Organization	No. of. batteries	8,869[e]	16,850	15,000	90	72
6. Bangpa-in Paper Mill and Thai Paper Mill	tons	3,600	9,669	23,000	168	55
7. N.E. Gunny, Bag Co., Ltd Thai Jute (Kangkoi) Gunny Bag Factory (Bangkasor)	bags (000)	8,835	15,200	45,000	72	51
8. Supanburi Sugar mill Cholburi Sugar Indutry Thai Sugar Organization	tons	26,210	41,200	14,000	57	9
9. Thai Tobacco Monopoly	Millions of cigarettes	9,783	11,000	500	12	27
10. Playing Card Factory	sets (000)	409	500	500	22	-
11. Ayuthya Liquor Distillery						
Liquor	20 litres (000)	157[e]	462	500	194	8
Alcohol	litre (000)	758[e]	860	900	13	5
12. Thai Plywood Co., Ltd	sheets (000)	913	1,450	2,600	59	79
13. Lignite Authority	tons (000)	163	268	440	64	64

[e] Jan.-Sept. actual, Oct.-Dec. estimated.

Table 2

TOTAL DEVELOPMENT EXPENDITURES OF STATE ENTERPRISES BY SOURCE OF FINANCING AND SECTOR, F.Y. 1961-F.Y. 1966

(In millions of baht)

Sector	Fiscal Year	Financing Source			Total	Fiscal Year	Financing Source			Total
		Own resources	Gov't Budget	Foreign loans			Own resources	Gov't Budget	Foreign loans	
Agriculture and Cooperatives	1961	31.59	6.24	-	37.83	1964	31.98	12.58	-	44.56
	1962	32.71	5.50	-	38.21	1965	23.92	16.59	-	40.51
	1963	50.15	14.75	-	64.90	1966	24.11	13.09	-	37.20
		114.45	26.49	-	140.94		80.01	42.26	-	122.27
Transport and Communications	1961	138.21	64.90	34.51	237.61	1964	379.99	264.42	315.70	960.11
	1962	219.94	42.60	36.99	299.53	1965	177.11	375.60	325.60	878.31
	1963	302.38	87.10	3.90	393.38	1966	155.29	167.00	174.60	497.19
		660.53	194.60	75.40	930.25		712.39	807.32	815.90	2,335.61

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Sector	Fiscal Year	Financing Source			Total	Fiscal Year	Financing Source			Total
		Own re-sources	Gov't Budget	Foreign loans			Own re-sources	Gov't Budget	Foreign loans	
Power	1961	130.79	93.90	330.97	555.66	1964	113.46	128.20	551.99	793.65
	1962	91.62	49.30	581.74	713.66	1965	69.00	130.20	240.38	439.58
	1963	121.71	126.80	602.80	851.31	1966	61.90	37.30	60.14	159.34
		344.12	270.00	1,515.51	2,129.63		244.36	295.70	852.51	1392.57
Industry	1961	100.98	77.00	-	177.98	1964	132.17	91.30	151.00	374.47
	1962	111.96	98.30	-	210.26	1965	115.75	98.10	78.50	292.35
	1963	106.31	131.00	10.00	247.31	1966	120.80	45.20	-	166.00
		319.24	306.30	10.00	635.55		368.72	234.60	229.5	832.82
Commerce	1961	20.49	5.00	-	25.49	1964	28.93	-	-	28.93
	1962	13.48	1.00	-	14.48	1965	28.29	-	-	28.29
	1963	20.87	-	-	20.87	1966	18.50	-	-	18.50
		54.84	6.00	-	60.84		75.72	-	-	75.72
Total		1,493.18	803.39	1,600.91	3,897.48		1,481.20	1,379.88	1,897.91	4,758.99

Note:- These figures exclude debt repayments from the Government Budget, and customs duties and business taxes.

Table 3

DEVELOPMENT EXPENDITURES OF STATE ENTERPRISES FINANCED WITH OWN RESOURCES, F.Y. 1964-F.Y. 1966

(In millions of baht)

Item	1964	1965	1966	Total
Agricultural Sector				
1. Cold Storage Organization	0.20	2.20	2.20	4.60
2. Forest Industry Organization	30.00	20.00	20.00	70.00
3. Fish Marketing Organization				
a. Quay construction project	0.69	0.72	0.81	2.22
b. Improvement and expansion project	0.70	0.70	0.70	2.10
4. Rubber Plantation Organization	0.39	0.30	0.40	1.09
Total	31.98	23.92	24.11	80.01
Transport and Communications Sector				
1. State Railways of Thailand				
a. Economic development investment in permanent national resources	231.68	59.18	50.09	340.95
b. Other investment expenditures				
2. Port Authority of Thailand	56.57	26.00	29.00	111.57
3. Telephone Organization of Thailand	72.17	69.28	56.57	198.02
4. Express Transport Organization	4.52	2.26	0.04	6.82
5. Thai Airways Company	15.05	20.39	19.59	55.03
Total	379.99	177.11	155.29	712.39

(Continued on next page)

Item	1964	1965	1966	Total
Power Sector				
1. Yanhee Electricity Authority	20.00	21.50	11.0	53.40
2. Metropolitan Electricity Board	78.46	30.00	30.00	138.46
3. Lignite Authority	3.00	3.50	4.00	10.50
4. Provincial Electricity Board	12.00	14.00	16.00	42.00
Total	113.46	69.00	61.0	244.36
Industry Sector				
1. Weaving Organization				
a. Improvement of the Bangkok Mill	2.66	2.87	2.67	8.20
2. Tanning Organization	0.83	0.45	0.20	1 48
3. Glass Organization				
a. Neutral glass production project	1.50	1.50	1.50	4.50
b. Improvement and expansion project	5.18	5.20	5.20	15.58
4. Battery Organization	2.65	3.00	3.30	8.95
5. Preserved Food Organization	2.00	2.00	3.00	7.00
6. Thai Jute Co. Ltd. (Kangkoi)	2.50	2.50	2.50	7.50
7. National Economic Development Corporation	11.00	12.00	13.00	36.00
8. Northeast Gunny Bag Company	10.00	11.00	16.90	37.90
9. Thai Tobacco Monopoly	67.00	59.74	55.52	182.26
10. Playing Card Factory	0.21	0.29	0.21	0.71
11. Ayudhya Liquor Distillery	0.94	0.70	1.00	2.64

(Continued on next page)

Item	1964	1965	1966	Total
12. Thai Plywood Company				
a. Production of plywood fibres project	15.00	-	-	15.00
b. Improvement and expansion project	-	4.00	5.00	9.00
13. Thai Sugar Organization	1.05	1.50	1.80	4.35
14. Gunny Bag Factory (Bangkasor)	9.65	9.00	9.00	27.62
Total	132.17	115.75	120.80	368.72
Commerce Sector				
1. Marketing Organization	0.50	0.50	0.50	1.50
2. Warehouse Organization	2.00	2.00	2.00	6.00
3. Fuel Oil Organization	26.43	25.79	16.00	68.22
Total	28.93	28.29	18.50	75.72
Grand total	686.53	414.07	380.60	1,481.20

Notes:-

1. The 1964 figures are prior to approval by NEDB. The 1965-1966 figures are estimates.
2. The investment figures of the Port Authority of Thailand do not include certain investment expenditures of the projects of the Port Authority, which are still under consideration by the NEDB.
3. In 1966 the purchase of ETO trucks to replace old ones is expected to be sufficient; no investment expenditures are therefore allocated for this year.

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Table I

SUMMARY OF SIX YEAR DEVELOPMENT PLAN EXPENDITURES

BY SECTOR AND BY FISCAL YEAR, 1961–1966*

(In millions of baht)

Sector	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961–1963	1964	1965	1966	1964-1966	Total
Agriculture and Cooperatives	396.32	582.74	667.54	1,646.60	712.60	1,171.62	1,090.74	2,974.96	4,621.56
Industry and Mining (including commerce and services)	411.84	409.94	575.16	1,396.94	480.96	427.70	287.83	1,196.19	2,593.13
Power	674.84	784.66	1,072.28	2,531.78	870.41	642.03	285.19	1,797.63	4,329.41
Communications and Transportation	873.14	1,098.43	1,253.03	3,224.60	1,981.38	2,339.24	2,684.59	7,005.21	10,229.81
Community Facilities and Social Welfare	309.82	533.56	879.03	1,722.68	1,263.06	1,206.90	1,275.15	3,745.11	5,467.79
Public Health	71.03	155.31	163.24	389.58	238.76	347.18	388.60	974.54	1,364.12
Education	178.20	250.92	256.13	685.25	401.03	580.90	824.11	1,806.04	2,491.29
Unallocated	158.33	257.25	345.21	760.79	364.00	286.00	150.00	800.00	1,560.79
Total	3,073.52	4,072.81	5,211.89	12,358.22	6,312.20	7,001.27	6,986.21	20,299.68	32,657.90

*Data for 1961–1963 include Central Government transfers to public enterprises for repayment of debt and payment of customs duties and business taxes amounting to 681 million baht (See Chapters 3 and 4 for details and statement of other factors limiting comparability of first half and second half.)

Table II

SUMMARY OF SIX YEAR DEVELOPMENT PLAN EXPENDITURES

BY SOURCE AND BY FISCAL YEAR, 1961–1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
National Budget Appropriations	1,601.57	1,991.81	2,582.34	6,175.72[a]	2,940.13	3,878.88	4,080.43	10,899.44	17,075.16
Central government	1,056.62	1,529.65	1,814.43	4,409.70	2,327.76	3,090.45	3,623.58	9,041.79	13,442.49
Public enterprises	483.95	367.16	632.91	1,484.02	496.37	620.43	262.85	1,379.65	2,863.67
Local governments	61.00	95.00	135.00	291.00	116.00	168.00	194.00	478.00	769.00
Foreign Loans	472.97	763.74	962.19	2,189.90	1,681.74	1,715.62	1,590.18	4,987.54	7,186.44
Central government	107.00	145.00	345.39	597.39	663.05	1,071.04	1,355.44	3,089.53	3,686.92
Public enterprises	365.97	618.74	616.80	1,601.51	1,018.69	644.58	234.74	1,898.01	3,499.52
Foreign Grants (Central government)	446.19	615.64	799.65	1,861.48	629.80	547.70	413.00	1,590.50	3,451.98
Own Resources	552.79	701.62	867.71	2,122.12	1,060.53	859.08	902.60	2,822.20	4,944.32
Public enterprises	422.79	470.62	600.71	1,494.12	686.53	414.07	380.60	1,481.20	2,975.32
Local governments	130.00	231.00	267.00	628.00	374.00	445.00	522.00	1,341.00	1,969.00
Total	3,073.52	4,072.81	5,211.89	12,358.22	6,312.20	7,001.27	6,986.21	20,299.68	32,657.90

[a] Of this total; 681 million baht represents appropriations to public enterprises for repayment of foreign debt and payment of customs and business taxes; the net total is 5,495 million baht

Table III

SUMMARY OF DEVELOPMENT PLAN NATIONAL BUDGET EXPENDITURES

FOR CENTRAL GOVERNMENT AGENCIES AND PUBLIC ENTERPRISES

BY SECTOR AND BY FISCAL YEAR, 1961–1966

(In millions of baht)

Item	First Half			Total 1961–1963	Second Half			Total 1964–1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Agriculture and Cooperatives	341.61	509.11	572.88	1,423.60	538.82	700.70	782.91	2,022.43	3,446.03
Central government	335.37	503.61	558.13	1 397.11	526.24	684.11	769.82	1,980.17	3,377.28
Public enterprises	6.24	5.50	14.75	26.49	12.58	16.59	13.09	42.26	68.75
Industry and Mining	230.46	257.40	333.27	821.13	146.66	182.56	126.23	455.45	1,276.58
Central government	10.42	28.59	38.19	77.20	55.45	84.47	81.02	220.94	298.14
Public enterprises	220.04	228.81	295.08	743.93	91.21	89.09	45.12	234.51	978.44
Power	164.13	89.98	248.77	502.88	198.36	264.45	103.25	566.06	1,068.94
Central government	3.23	9.71	29.01	41.95	70.20	134.30	66.00	270.50	312.45
Public enterprises	160.90	80.27	219.76	460.93	128.16	130.15	37.25	295.56	756.49
Communications and Transportation	456.05	515.50	630.00	1,601.55	980.99	1,362.73	1,558.30	3,902.02	5,503.57
Central government	359.28	562.92	526.68	1 348.88	716.57	987.13	1,391.00	3,902.02	4,443.58
Public enterprises	96.77	52.58	103.32	252.67	264.42	375.60	167.30	807.32	1,059.99

Item	First Half			Total 1961–1963	Second Half			Total 1964–1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Community Facilities and Social Welfare	165.58	207.49	264.30	637.37	398.31	615.40	673.85	1,687.56	2,324.93
Central government	104.58	112.49	135.00	346.37	282.31	447.49	479.85	1,209.56	1,555.93
Local governments	61.00	95.00	129.30	291.00	116.00	168.00	194.00	478.00	769.00
Public Health (Central government)	38.80	84.47	105.94	229.21	186.16	215.94	244.58	646.68	875.89
Education (Central government)	116 94	196.86	246.18	559.98	340.83	387.10	441.31	1,169.24	1,729.22
Unallocated (Central government)	88.00	131.00	181.00	400.00	150.00	150.00	150.00	450.00	850.00
Total	1,601.57	1,991.81	2,582.34	6,175.72	2,940.12	3,878.88	4,080.43	10,899.44	17,075.16
Central government	1,056.62	1,529.65	1,814.43	4,400.70	2,327.76	3,090.45	3,623.58	9,041.79	13,442.49
Public enterprises	483.95	367.16	632.91	1,484.02	493.37	620.43	262.85	1,379.65	2,863.67
Local governments	61.00	95.00	135.00	291.00	116.00	168.00	194.90	478.00	769.00

Table IV

SUMMARY OF SIX YEAR DEVELOPMENT PLAN EXPENDITURES FINANCED BY FOREIGN LOANS BY SECTOR, SOURCE OF FINANCING AND FISCAL YEAR 1961-1966

(In millions of baht)

Item	Fist Half			Total	Secon Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	total
Agriculture and Cooepratives	-	-	1.39	1.39	98.10	399.50	231.42	729.02	730.41
IBRD	-	-	1.39	1.39	37.01	5.86	4.37	47.24	48.63
(Prospective)	-	-	-	-	-	336.00	168.00	504.00	504.00
U S AID	-	-	-	-	61.09	40.42	10.12	111.63	111.64
(Prospective)	-	-	-	-	-	17.22	48.93	66.15	66.15
Industry and Mining	15.00	-	10.00	25.00	151.00	78.50	-	229.50	254.50
U.S (PL 480 II)	15.00	-	-	15.00	-	-	-	-	15.00
Japan									
Toyo Menka (Supplier's credit)	-	-	10.00	10.00	98.50	26.00	-	124.50	134.50
IBRD									
W. Germany (Kreditanstalt fur Wiederaufbau)	-	-	-	-	52.50	52.50	-	105.00	105.00
Power	330.97	581.74	602.80	1,515.51	551.99	300.38	110.14	962.51	2,478.02
IBRD	207.47	348.05	244.58	800.10	197.59	35.70	-	233.29	1,033.39
U S. Eximbank	29.31	133.12	90.30	252.73	-	-	-	-	252.73
U S. DLF	94.19	73.12	100.80	268.11	82.77	-	-	82.77	350.88
Austria									
Consortium of Elin-Union A.G. Waagner Biro A.G. (Supplier s credit)	-	27.45	157.84	185.29	85.09	2.80	-	87.89	273.18
W. Germany (Kreditanstalt fur Weideraufbau)	-	-	9.28	9.28	89.31	88.26	23.18	200.75	210.03

Item	First Half			Total	Secand Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
Prospective	-	-	-	-	97.23	173.62	86.96	357.81	357.81
U.S. AID W. Germany					97.23	173.62	86.96	357.81	357.81
Communications and Transportation	115.00	91 00	9.00	215.00	473.40	677.10	863.10	2,013.60	2,228.60
U.S. (DLF)	35.00	2.00	-	37.00	-	-	-	-	37.00
(PL 480-Yen)	-	35.00	-	35.00	-	-	-	-	35.00
(ICA-AID)	80.00	54.00	5.00	139.00	63.00	-	-	63.00	202.00
(Eximbank)	-	-	-	-	96.70	72.37	224.97	394.04	394.04
IBRD	-	-	-	-	97.10	344.93	418.13	860.16	860.16
W. Germany (Kreditanstalt fur Wiederaufbau)	-	-	4.00	4.00	195.60	24.30	12.50	232.40	236.40
Prospective	-	-	-	-	21.00	235.50	207.50	464.00	464.00
IBRD						100.00	150.00	271.00	271.00
U.S.	-	-	-	-	21.00				
W. Germany	-	-	-	-	-	57.50	75.50	115.00	115.00
Japan	-	-	-	-	-	78.00	-	78.00	78.00
Community Facilities and Social Welfare	12.00	91.00	339.00	442.00	407.25	68.00		475.25	917.25
France									
Degremont (Supplier's credit)	12.00	91.00	339.00	442.00	407.25	68.00	-	475.25	917.25
Public Health	-	-	-	-	-	69.64	75.42	145.06	145.06
(Prospective)						69.64	75.42	145.06	145.06
Education	-	-	-	-	-	122.50	310.00	432.60	432.60
IDA									
(Prospective)						122.50	310.10	432.60	432.60
Total	472.97	763.74	962.19	2,198.90	1,681.74	1,715.62	1,590.18	4,987.54	7,186.44
Existing loans	-	-	-	-	1,563.51	761.14	693.27	3,017.92	5,126.82
Prospective loans	-	-	-	-	118.23	954.48	896.91	1,969.62	1,969.62

Table V

SUMMARY OF SIX YEAR DEVELOPMENT PLAN EXPENDITURES FINANCED BY FOREIGN GRANTS BY SECTOR, SOURCE OF FINANCING AND FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
1. Agriculture and Cooperatives	22.71	40.63	43.27	106.16	43.70	47.50	52.30	143.50	250.11
a. U.S. Dollar Grant Aid	11.51	14.32	11.11	36.94	17.00	13.00	11.00	41.00	77.94
b. U.N. Specialized Agencies	2.20	2.30	2.40	6.90	4.30	5.20	5.40	14.90	21.80
c. U.N. Special Fund	-	3.01	5.76	8.77	6.40	11.30	13.90	31.60	40.37
d. Colombo Plan	n.a.	n.a.	n.a.	n a.	8.00	9.00	11.00	28.00	28.00
e. U.S Counterpart Fund	9.00	21.00	24.00	54.00	-	-	-	-	54.00
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	8.00	9.00	11.00	28.00	28.00
2. Industry and Mining	44.38	26.54	104.89	175.81	22.20	22.30	22.30	66.80	242.61
a. U.S. Dollar Grant Aid	40.00	20.00	100.00	160.00	2.00	3.00	3.00	8.00	168.00
b. U.N. Specialized Agencies	1.90	2.00	1.80	5.70	1.70	1.70	1.70	5.10	10.80
c. U.N. Special Fund	2.48	4.54	3.09	10.11	9.50	8.60	8.60	26.70	36.81
d. Colombo Plan	n.a.	n.a.	n.a.	n.a.	4.00	4.00	4.00	12.00	12.00
e. U.S. Counterpart Fund	-	-	-	-	-	-	-	-	-
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	5.00	5.00	5.00	15.00	15.00
3. Power	48.95	21.32	99.00	169.27	6.60	8.20	9.90	24.70	193.97
a. U.S. Dollar Grant Aid	39.00	20.00	99.00	158.00	2.00	2.00	2.00	6.00	164.00
b. U.N. Specialized Agencies	-	-	-	-	-	-	-	-	-
c. U.N. Special Fund	9.95	1.32	-	11.27	2.60	3.20	3.90	9.70	20.97
d. Colombo Plan	-	-	-	-	1.00	1.00	2.00	4.00	4.00
e. U.S. Counterpart Fund	-	-	-	-	-	-	-	-	-
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	1.00	2.00	2.00	5.00	5.00

Item	First Half			Total	Second Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
4. Transportation and Communications	164.09	271.93	312.03	784.05	147.00	122.30	107.90	377.20	1,125.25
a U.S. Dollar Grant Aid	46.12	38.37	17.60	102.09	133.00	79.00	78.00	270.00	372.09
b U.N Specialized Agencies	n.a.	n.a.	n.a.	n.a.	1.50	1.50	1.50	4.50	4.50
c U.N. Special Fund	12.97	13.56	14.43	40.96	16.50	23.80	9.40	49.70	90.66
d Colombo Plan	n.a.	n.a.	n.a.	n.a.	11.00	12.00	13.00	36.00	36.00
e U.S. Counterpart Fund	105.00	220.00	280.00	605.00	-	-	-	-	605.00
f "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	5.00	6.00	6.00	17.00	17.00
5. Community Facilities and Social Welfare	2.24	4.07	9.00	15.31	83.50	78.50	79.30	241.30	256 61
a U.S. Dollar Grant Aid	1.24	3.07	8.00	12.31	75.00	70.00	70.00	215.00	227.31
b. U.N. Specialized Agencies	1.00	1.00	1.00	3.00	1.50	1.50	1.50	4.50	7.50
c U.N. Special Fund	-	-	-	-	-	-	-	-	-
d Colombo Plan	n.a.	n.a.	n a.	n.a.	2.00	2.00	2.80	6.80	6.80
e U.S. Counterpart Fund	-	-	-	-	-	-	-	-	-
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	5.00	5.00	5.00	15.00	15.00
6. Public Health	32.23	70.84	57.30	160.37	52.60	61.60	68.60	182.80	343.17
a. U.S. Dollar Grant Aid	19.72	46.73	29.00	95.45	33.00	42.00	46.00	121.00	216.45
b. U.N. Specialized Agencies	3.51	3.11	3.30	9.92	3.50	3.60	3.60	10.80	20.72
c. U.N. Special Fund	-	-	-	-	-	-	-	-	-
d. Colombo Plan	n.a.	n.a.	n.a.	n.a.	8.00	8.00	10.00	26.00	26 00
e. U.S. Counterpart Fund	9.00	21.00	25.00	55.00	-	8.00	-	-	55.00
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	8.00	-	9.00	25.00	25.00
7. Education	61.26	54.06	9.95	125.27	60.20	71.30	72.70	204.20	329.47
a. U.S. Dollar Grant Aid	58.70	51.26	4.39	114.35	33.00	41 00	40.00	114.00	228.35
b U.N. Specialized Agencies	2.56	2.41	2.52	7.49	3.00	3.00	3.00	9.00	16.49
c. U.N. Special Fund	-	0.39	3.04	3.43	3.60	3.40	2.50	9.50	12.93
d Colombo Plan	n.a.	n.a.	n.a.	n.a.	14.00	14.00	14.00	42.00	42.00
e. U.S. Counterpart Fund	-	-	-	-	-	-	-	-	-
f. "Third Countries" and other	n.a.	n.a.	n.a.	n.a.	6.60	9.90	13.20	29.70	29.70

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
8. Unallocated[a]	70.33	126.25	164.21	460.79	214.00	136.00	-	350.00	710.79
Total	446.19	615.64	799.65	1,861.48	629.80	547.70	413.00	1,590.50	3,451.98
U.S. Dollar Grant Aid	286.62	320.00	433.31	1,039.93	275.00	250.00	250.00	775.00	1,814.93
U.N. Specialized Agencies	11.17	10.82	11.02	33.01	15.60	16.50	16.70	48.00	81.81
U.N. Special Fund	25.40	21.82	26.32	74.54	38.60	50.30	38.30	127.00	201.74
Colombo Plan	n.a.	n.a.	n.a.	n.a.	48.00	50.00	56.80	154.80	154.80
U.S. Counterpart Fund	123.00	262.00	329.00	714.00	214.00	136.00	-	350.00	1,064.00
"Third Countries" and others	n.a.	n.a.	n.a.	n.a.	38.60	44.90	51.20	134.70	134.70

n.a. Not available.

"Third Countries" - bilateral grant aid from countries other than United States and Colombo Plan countries.

[a] Represents U.S. dollar grant disbursements in 1961-1963 and withdrawals of U.S. counterpart funds (U.S. contribution) in 1964-1966, primarily for projects in the transportation - communications and public health sectors.

Table VI

SUMMARY OF CENTRAL GOVERNMENT TOTAL BUDGET RECEIPTS AND EXPENDITURES, APPROPRIATION YEAR BASIS, F.Y. 1961–1966

Item	1961 Actual	1962 Actual	1963 Prel. actual	Total 1961–1963	1964 Estimated	Total 1964–1966 Estimated
1. Budget revenues	5,690.00	7,984.10	8,632.90	22,307.00	9,156.00	29,886.00
a. Taxation	5,250.50	7,372.20	7,931.60	20,554.30	8,296.00	26,191.00
b. Misc. revenues and income	439.50	611.90	701.30	1,752.70	860.00	2,700.00
c. Additional taxes and other revenues	–	–	–	–	–	995.00
2. Minus normal administratives expenditures including defense[a]	3,735.73	5,534.90	6,342.26	15,621.68	6,950.87	21,290.96
3. Minus debt repayment and service charges	524.90	658.90	737.20	1,921.00	1,079.00	3,957.60
a. Interest on debt and other charges	294.50	428.10	533.50	1,256.10	690.40	2,497.60
1) Existing debt	294.50	428.10	533.50	1,256.10	628.40	1,929.60
(a) Internal	251.60	358.90	373.90	982.50	433.70	1,319,70
(b) Foreign	42.90	70.10	159.60	272.60	194.70	609.90
(2) Prospective internal debt	–	–	–	–	62.00	568.00
b. Debt repayments (excluding refinancing of loans)	230.40	230.80	203.70	664.90	388.60	1,460.00
(1) Existing foreign debt[b]	230.40	230.80	203.70	664.90	343.00	1,221.00
(2) Existing internal debt	–	–	–	–	45.60	249.00
(a) Bank of Thailand	(183.90)	(348.90)	(84.30)	–	21.30	132.10
(b) Others	–	–	–	–	24.30	116.90
4. Revenue surplus available for development expenditures	1,429.37	1,790.51	1,546.23	4,766.11	1,126.13	4,637.44

Item	1961 Actual	1962 Actual	1963 Prel. actual	Total 1961–1963	1964 Estimated	Total 1961–1966 Estimated
5. Non–expansionary sales of Government bonds and treasury bills	485.50	855.60	1,155.00	2,496.10	800.00	2,550.00
a. Bonds, adjusted new sales (cash basis)	377.30	705.40	951.50	2,034.20	800.00	2,550.00[c]
(1) Government Saving Bank	165.00	240.00	356.00	761.00	400.00	1,100.00
(2) Other public	141.40	175.60	171.60	488.60	200.00	700.00
(3) Commercial banks	120.10	341.20	461.80	923.10	200 00	750.00
(4) Minus repayments	-49.20	-51.40	-37.90	-138.50	—	—
b. Treasury bills net changes in holdings of :	108.20	150.20	203.50	461.90	—	461.90
(1) Other public	5.70	-12.40	34.30	27.60		27.60
(2) Commercial banks	102.50	162.40	169.20	343.30		343.30
6. Non–budgetary transactions	150.10	174.70	286.00	610.80	—	—
7. Subtotal (4 + 5 + 6)	2,064.97	2,810.81	2,987.23	7,873.01	1,926.13	7,146.44
8. Development expenditures[a]	1,601.57[d]	1,991.81[d]	2,582.34[d]	6,175.72[d]	2,940.13[d]	10,899.44[d]
a Excluding grants to state enterprises for foreign debt repayments and internal taxes	1,364.66	1,821.35	2,309.08	5,495.09	2,940.13	10,858.44
b. Grants to state enterprises for foreign debt repayments and internal taxes	236.91	170.46	273.26	680.63	—	—
9. Surplus or deficit (—)	463.40	829.00	412.10	1,704.50	-1,014.00	-3,712.00
a Monetary authorities	183.90	348.90	-84.30	448.50		
b Use of cash, adjusted	279.50	480.10	496.40	1,256.00		

[a] Normal administrative expenditures are derived as a residual and are not strictly comparable as between 1961 - 1963 and 1964-1966 because of changes in the scope and definition of "development expenditures."

[b] Foreign debt repayments of state enterprises are included under development expenditures (item 8b).

[c] 1964–1966 : New long-term borrowings; repayments against existing debt are included under item 3 b (2a).

[d] Budget appropriations.

Table VII

SUMMARY OF FOREIGN TRADE OF THAILAND BY CALENDAR YEAR, 1953–1963

(In thousands of baht)

Year	Exports, including re-exports (f.o.b.)	General imports (c.i.f.)	Balance
1953	5,771,832	6,471,534	– 699,702
1954	6,177,014	7,021,527	– 844,513
1955	7,120,548	7,502,648	– 382,100
1956	6,923,196	7,655,127	– 731,931
1957	7,539,541	8,536,971	– 997,430
1958	6,446,647	8,237,043	– 1,790,396
1959	7,560,377	8,988,336	– 1,427,959
1960	8,614,311	9,622,561	– 1,007,750
1961	9,996,983	10,287,271	– 290,288
1962	9,529,171	11,503,665	– 1,974,494
1963	9.730,722	12,486,398	– 2,755,676
Ten year average annual increase 1952–1962*	8.14 %	7.74 %	–
Three year average annual increase 1960–1963*	4.49 %	9.09 %	–

*Link index method.

Source: Trade data from Customs Department; 1949 – 1951 official rates, 1952 – 1963 free market rates.

Table A-1

SUMMARY OF SIX YEAR PLAN EXPENDITURES FOR DEVELOPMENT OF AGRICULTURE AND COOPERATIVES BY FINANCING SOURCE AND BY FISCAL YEAR, 1961-1966

(In millions of baht)

Source	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Budget Appropriations	341.61	509.11	572.88	1,423.60	538.82	700.70	782.91	2,022.43	3,446.03
Central government	335.37	503.61	558.13	1,397.11	526.24	684.11	769.82	1,980.17	3,377.28
Public enterprises	6.24	5.50	14.75	26.49	12.58	16.59	13.09	42.26	68.75
Foreign Loans	-	-	1.39	1.39	98.10	399.50	231.42	729.02	730.41
Central government	-	-	1.39	1.39	98.10	399.50	231.42	719.02	730.41
Public enterprises	-	-	-	-	-	-	-	-	-
Foreign Grants (Central government)	22.71	40.63	43.27	106.61	43.70	47.50	52.30	143.50	250.11
Own Resources (Public enterprises)	32.00	33.00	50.00	115.00	31.98	23.29	24.11	80.01	195.01
Total	396.32	582.74	667.54	1,646.60	712.60	1,171.62	1,090.74	2,974.96	4,621.56

Table A-2

DEVELOPMENT PROGRAMME/PROJECTS IN AGRICULTURE AND COOPERATIVES FINANCED BY BUDGET APPROPRIATIONS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
Under-Secretary Office (Ministry of Agriculture)	-	-	-	-	9.03	11.80	14.80	35.63	35.63
1. Agricultural extension	-	-	-	-	1.06	2.50	2.80	6.36	6.36
2. Demonstration farm, Huey See Thon	-	-	-	-	2.00	1.50	1.50	5.00	5.00
3. Agricultural station, Khon kaen	-	-	-	-	1.96	3.00	5.00	9.96	9.96
4. Farm management, Chao Phraya River basin	-	-	-	-	0.41	0.75	1.00	2.16	2.16
5. Agricultural economics, research	-	-	-	-	1.40	1.75	2.00	5.15	5.15
6. Agricultural aviation services	-	-	-	-	2.20	2.30	2.50	7.00	7.00
Department of Agriculture	19.95	31.75	32.01	83.71	38.95	43.31	46.03	128.29	212.00
1. Rubber, research and extension	6.24	9.00	8.82	24.06	8.96	9.00	9.10	27.06	51.12
2. Coffee, research and extension	0.47	0.68	0.61	1.76	0.67	0.68	0.70	2.05	3.81
3. Coconut, research and extension	0.33	0.21	0.50	1.04	0.65	0.65	0.70	2.00	3.04
4. Pepper, research and extension	0.25	0.29	0.35	0.89	0.37	0.38	0.40	1.15	2.04
5. Agricultural stations	3.43	5.00	6.43	14.86	7.04	8.00	8.50	23.54	38.40
6. Crop field trial and propagation stations	-	-	-	-	2.31	2.50	3.00	7.81	7.81

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
7. Land clearing	0.70	3.30	1.62	5.62	1.44	1.30	1.00	3.74	9.36
8. Agriculture, research and promotion	0.49	0.80	0.90	2.19	1.00	1.20	1.30	3.50	5.69
9. Promotion of cotton production	0.96	1.38	1.99	4.33	4.44	3.00	3.50	10.94	15.27
10. Control of pests and crop disease	1.79	2.78	3.80	8.37	2.29	3.00	3.50	8.79	17.16
11. Production and improvement of staple crops	2.36	3.10	3.05	8.51	3.56	5.00	5.20	13.76	22.27
12. Soils and fertilizers, survey and research	1.21	3.16	3.73	8.10	3.82	6.00	6.30	16.12	24.22
13. Botanical plans, survey and research	-	-	-	-	0.35	0.38	0.40	1.13	1.13
14. Plant diseases, survey and research	-	-	-	-	1.20	1.22	1.23	3.65	3.65
15. Expansion of agricultural stations in Chao Phraya basin	-	-	-	-	0.85	1.00	1.20	3.05	3.05
16. Kenaf retting well, Khon-kaen	-	-	0.21	0.21	-	-	-	-	0.21
17. Agricultural improvements, Northeast	1.72	2.05	-	3.77	-	-	-	-	3.77
Department of Rice	12.64	21.82	25.25	59.71	30.25	34.80	39.30	104.35	164.06
1. Experimentation, rice varieties	1.19	1.68	1.90	4.77	2.19	2.50	2.80	7.49	12.26
2. Rice varieties experiment and expansion stations	5.76	8.82	8.46	23.04	10.66	13.00	15.00	38.66	61.70
3. Extension services	1.55	2.13	2.64	6.32	4.37	5.00	5.50	14.87	21.19
4. Rice disease control	0.89	4.88	5.18	10.95	4.42	4.50	4.80	13.72	24.67
5. Research in rice technology	1.65	2.00	4.74	8.39	4.37	5.30	5.50	15.17	23.56
6. Research on rice equipment and machinery	0.60	0.94	1.19	2.73	1.14	1.50	1.70	4.34	7.07

Item	First Half			Total	Second Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964 1966	
7. Rice farming machinery services	1.00	1.37	1.14	3.51	1.20	1.00	1.00	3.20	6.71
8. Experiment station for Chao Phraya Basin	-	-	-	-	1.90	2.00	2.00	6.90	6.90
Fisheries Department	5.12	16.84	23.77	45.73	30.10	21.80	23.93	75.83	121.56
1. Fresh water fishing experiment and extension	2.59	3.50	7.32	13.41	9.79	11.00	12.00	32.79	46.20
2. Brackish water fishing, experiment and extension	0.51	0.68	0.81	2.00	0.80	1.00	1.10	2.90	4.90
3. Sea water fishing, experiment and extension	2.02	12.44	10.59	25.05	18.85	9.00	10.00	37.85	62.90
4. Experiment and extension of water-animal industries	-	0.22	0.25	0.47	0.26	0.30	0.33	0.89	1.36
5. Experiment station, Chao Phraya Basin	-	-	-	-	0.40	0.50	0.50	1.40	1.40
6. Construction, oceanographic survey ship	-	-	4.80	4.80	-	-	-	-	4.80
Department of Livestock	18.72	29.18	35.74	83.64	35.69	37.42	39.85	112.96	196.60
1. Breeding stations	3.62	4.61	7.02	15.25	9.07	9.50	10.00	28.57	43.82
2. Castration services	0.23	0.39	0.47	1.09	0.71	0.75	0.80	2.26	3.35
3. Artificial insemination	0.59	0.84	1.06	2.49	1.06	1.25	1.50	3.81	6.30
4. Pig breeding center	0.12	0.07	0.08	0.27	0.08	0.10	0.12	0.30	0.57
5. Duck breeding promotion	0.27	0.32	0.27	0.86	0.29	0.32	0.35	0.96	1.82
6. Animal nutrition, experiment and promotion	0.64	0.86	0.96	2.46	1.15	1.70	2.00	4.85	7.31
7. Promotion of milk - cow breeding	-	3.80	5.50	9.30	0.79	1.00	1.50	3.29	12.59

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
8. Animal disease prevention, eradication, veterinary services	10.14	14.22	16.00	40.36	17.26	17.80	18.30	53.36	93.72
9. Biological products (vaccines, serums)	2.09	2.82	2.96	7.87	3.82	3.50	3.75	11.07	18.94
10. Veterinary science research	1.02	1.25	1.42	3.69	1.46	1.50	1.53	4.49	8.18
Forestry Department	24.88	29.32	31.66	85.86	35.63	39.45	42.55	117.63	203.49
1. Forest protection and control	7.70	6.04	6.64	20.38	6.89	7.10	7.50	21.49	41.87
2. Forest resources survey	1.66	1.43	1.73	4.82	1.84	2.00	2.20	6.04	10.86
3. Forest conservation	2.83	4.09	5.07	11.99	5.31	6.50	7.00	18.81	40.80
4. National gardens and natural parks	2.26	3.27	3.86	9.39	4.09	4.50	5.00	13.59	22.98
5. Conservation of wild life	-	0.31	0.31	0.62	0.39	0.50	0.53	1.42	2.04
6. Natural forests silviculture	1.12	1.87	2.00	4.99	2.05	2.10	2.20	6.35	11.34
7. Reafforestation	7.30	9.80	9.42	26.52	9.71	10.00	10.50	30.21	56.73
8. Research in forest sciences and watershed areas	0.38	0.56	0.57	1.51	1.14	1.85	2.57	5.56	7.07
9. Wood and forest products properties, research	0.68	0.83	1.01	2.52	1.60	1.40	1.50	4.06	6.58
10. Lac cultivation, promotion and research	0.77	0.88	0.80	2.45	1.45	1.50	1.55	4.50	6.95
11. Botany and entomology research	0.18	0.24	0.25	0.67	-	-	-	-	0.67
12. Wood fibre survey for paper production	-	-	-	-	1.60	2.00	2.00	5.60	5.60
Irrigation Department	243.85	341.63	370.68	956.16	296.20	418.43	464.56	1,179.19	2,135.30
1. Mae Yom, Phrae	9.80	11.90	15.61	37.31	11.68	16.00	18.00	45.38	82.69
(S.B. Yanhee electricity)	-	-	7.00	7.00	-	-	-	-	7.00
2. Kiewlom, Lampang	-	-	-	-	2.30	15.00	20.00	37.30	37.30

Item	First Half			Total	Secnd Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
3. Mae Tang, Chiengmai	-	-	36.70	36.70	10.00	34.06	4.34	48.40	174.89
4. Lampao, Karasin	-	-			12.00	36.54	0.98	49.52	
5. Lamplaplerng, Nakornratchsima	-	-			10.00	24.03	6.24	40.27	
6. Lamtakong, Nakornratchsima	-	-	-	-	23.00	35.00	50.00	108.00	108.00
7. Lam Oon, Skonnakorn	-	-	-	-	-	6.60	13.00	19.60	19.60
8. Lam Chee, Chaiyabhum	-	-	-	-	-	5.20	10.00	15.20	15.20
9. Kaeng Kra Charn, Petchburi	5.13	20.65	21.91	47.69	25.05	49.00	18.50	92.55	140.24
10. Ta Chied, Pattalung	-	-	-	-	0.40	3.00	6.00	9.40	9.40
11. Dykes and ditches, Chao Phraya	1.50	6.47	5.00	12.97	7.65	12.00	15.00	34.65	47.62
12. Muang Fai irrigation	0.38	13.50	12.49	26.37	15.31	20.00	25.00	60.31	86.68
13. Flood control	0.90	1.54	2.28	4.72	3.12	5.00	-	8.12	12.84
14. Northeast, irrigation tanks	16.00	15.05	18.54	49.69	10.44	20.00	25.00	55.44	105.03
15. Bhumiphol Dam, Tak	132.71	168.31	181.97	482.99	96.71	-	-	96.71	579.70
16. Chaoh Praya Dam	67.98	89.89	55.82	213.69	40.70	-	-	40.70	254.39
17. Ta pla Dam, Uttraradith	-	-	-	-	14.98	60.00	100.00	174.98	174.98
18. Mae Klong Yai	-	2.00	1.89	3.89	12.86	40.00	110.00	162.66	166.55
19. Mae Lao, Chiengrai	3.75	7.00	6.38	17.13	-	-	-	-	17.13
20. West field project, Ayuthya	3.70	5.32	5.09	14.11	-	-	-	-	14.11
21. Hoy Phraharn, Skonnakorn	2.00	-	-	2.00	-	-	-	-	2.00
22. ChaoPhraya field waters system	-	-	-	-	-	20.00	20.00	40.00	40.00
23. Irrigation tank at Kra Siew	-	-	-	-	-	6.00	15.00	21.00	21.00
24. Water Conservation	-	-	-	-	-	6.00	6.50	12.50	12.00
25. Water main system, North region	-	-	-	-	-	5.00	5.00	10.00	10.00
Land Cooperatives Department	7.58	19.73	25.31	52.62	23.49	24.90	27.95	76.34	128.96
1. Establishment and extension of land improvement cooperatives	4.44	11.65	17.29	33.38	14.86	16.00	18.00	48.86	82.24

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
2. Estate cooperatives	2.42	6.84	6.29	15.55	7.31	7.50	8.50	23.31	38.86
3. Establishment and extension of hire-purchase and lessee cooperatives	0.72	1.24	1.73	3.69	1.32	1.40	1.45	4.17	7.86
Department of Land Development	-	-	-	-	22.81	27.50	30.50	80.81	80.81
1. Land classification survey	-	-	-	-	11.80	16.00	18.50	46.30	46.30
2. Land conservation	-	-	-	-	11.01	11.50	12.00	34.51	34.51
Department of Cooperatives Credit and Marketing	2.63	3.34	3.71	9.68	4.09	4.70	5.35	14.14	23.82
1. Fund-accumulation cooperatives	0.77	1.09	1.26	3.12	1.53	1.70	1.85	5.08	8.20
2. Agricultural credit cooperatives	0.24	0.27	0.44	0.95	0.59	0.75	0.90	2.24	3.19
3. Loan control	0.10	0.15	0.16	0.41	0.17	0.20	0.25	0.62	1.03
4. Paddy marketing cooperatives	0.60	0.84	0.82	2.26	0.78	0.90	1.00	2.68	4.94
5. Agricultural products marketing cooperatives	0.56	0.48	0.49	1.53	0.52	0.60	0.75	1.87	3.40
6. Industrial cooperatives	0.33	0.47	0.49	1.29	0.50	0.55	0.60	1.65	2.94
7. Changwad cooperatives	0.03	0.04	0.05	0.12	-	-	-	-	0.12
Under-Secretary Office, Ministry of Finance	-	10.00	10.00	20.00	-	10.00	20.00	30.00	50.00
1. Agricultul credit fund	-	10.00	10.00	20.00	-	10.00	20.00	30.00	50.00
Resreve	-	-	-	-	-	10.00	15.00	25.00	25.00

Item	First Half			Total	Secnd Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
Public Enterprises (Total)	6.24	5.50	14.75	26.49	12.58	16.59	13.09	42.27	68.75
Rubber Plantation Organization	2.24	1.50	7.75	11.49	7.05	8.50	8.80	24.35	35.84
1. Nabon rubber plantation	2.24	1.50	7.75	11.49	1.50	1.50	-	3.00	14.49
2. Toong Song rubber plantation	-	-	-	-	5.55	7.00	8.80	21.35	21.35
Cold Storage Industry Organization	4.00	4.00	7.00	15.00	4.02	1.50	-	5.70	20.70
1. Cold storage construction	4.00	4.00	7.00	15.00	4.02	1.50	-	5.70	20.70
Fish Marketing Organization	-	-	-	-	1.33	6.59	4.29	12.21	12.21
1. Pier construction	-	-	-	-	1.33	6.59	4.29	12.21	12.21
Grand Total	341.61	509.11	572.88	1,423.60	538.82	700.70	782.91	2,022.43	3,446.03

Note : Some changes may occur in 1965 and 1966 in the total expenditure and in the composition of projects.

Table A-3

PROJECTS IN AGRICULTURE AND COOPERATIVES FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961 - 1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	total
Royal Irrigation Department									
1. IBRD	-	-	1.39	1.39	37.01	5.86	4.37	47.24	48.63
(Kaeng-Kracharn)	-	-	1.39	1.39	29.73	2.23	1.61	33.57	34.96
(Dykes and ditches)	-	-	-	-	7.28	3.63	2.76	13.67	13.67
2. U.S. AID	-	-	-	-	61.09	40.42	10.12	111.63	111.63
(Lam-Pao)					23.56	16.47	5.10	45.13	45.13
(Lam-Phaperng)					19.59	13.71	3.64	36.94	36.94
(Mae-Tang)					17.94	10.24	1.38	29.56	29.56
3. Prospective (Total)					-	353.22	216.93	570.15	570.15
IBRD					-	336.00	168.00	504.00	504.00
(Mae-Klong-Yai)					-	168.00	84.00	252.00	252.00
(Ta-Pla)					-	168.00	84.00	252.00	252.00
U.S. AID					-	17.22	48.93	66.15	66.15
(Lam-Chee)					-	-	33.60	33.60	33.60
(Lam-Oon)					-	17.22	15.33	32.55	32.55
Total	-	-	1.39	1.39	98.10	399.50	231.42	729.02	730.41

Table A - 4

PROJECTS IN AGRICULTURE AND COOPERATIVES FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964 - 1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	17.00	13.00	11.00	41.00
1. Extension services				
2. Agricultural economics				
3. Research and Khonkaen central station				
4. Development of land and water				
5. Northeastern irrigation survey				
United Nations Special Fund	6.40	11.30	13.90	31.60
1. Demonstration farm at Hoy Si Thon				
2. Wood fibre survey for paper production				
3. Rubber research and experiment				
4. Soil fertility survey				
5. Rice Disease research Institute				
United Nations (F.A.O.)	4.30	5.20	5.40	14.90
1. Soil survey				
2. Fresh-water fishing and fishing boat construction				
3. Agricultural statistics				
4. Watershed areas conservation				
5. Farm management				
6. Eradication and pest control				
7. Agricultural credit irrigation				
Colombo Plan	8.00	9.00	11.00	28.00
1. Soil survey (Australia)				
2. Agricultural development, Chao Phraya basin (Australia)				
3. Agricultural productivity centre (U.K.)				
4. Cotton promotion				
5. Sea pearl oyster survey (Japan)				
6. Institute of Fresh-Water Fishing (Canada)				

Item	1964	1965	1966	Total
Others	8.00	9.00	11.00	28.00
1. Cotton extension in irrigated areas (France)				
2. Agricultural engineering (W. Germany)				
3. Sea-water fishing (W. Germany)				
4. Diary farm at Chiengmai (W. Germany)				
5. Laboratory for forest products research (W. Germany)				
6. Siviculture of northern forests (W. Germany)				
7. Utilisation of irrigated water (Israel)				
8. Cooperatives development (Israel, Taiwan)				
9. Mouth and foot disease laboratory (France)				
Total	43.70	47.50	52.30	143.50

Table B-I

SIX YEAR PLAN EXPENDITURES FOR DEVELOPMENT OF INDUSTRY AND MINING[•]

BY FINANCING SOURCE AND BY FISCAL YEAR, 1961–1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961–1963	1964	1965	1966	1964–1966	Total
Budget Appropriations	230.46	257.40	333.27	821.13	146.66	182.56	126.23	455.45	1,276.58
Central government	10.42	28.59	38.19	77.20	55.45	84.47	81.02	220.94	298.14
Public enterprises	220.04	228.81	295.08	743.93	91.21	98.09	45.21	234.51	978.44
(For development only)	(79.00)	(100.80)	(131.00)	(310.80)					
Foreign Loans	15.00	–	10.00	25.00	151.00	78.50	–	229.50	254.50
Central government	15.00	–	–	15.00	–	–	–	–	15.00
Public enterprises	–	–	10.00	10.00	151.00[a]	78.50[a]	–	229.50	239.50
Foreign Grants	44.38	26.54	104.89	175.81	22.20	22.30	22.30	66.80	242.61
(Central government)									
Own Resources	122.00	126.00	127.00	374.00	161.10	144.04	139.30	444.44	818.44
(Public enterprises)									
Total	411.84	409.94	575.16	1,396.94	480.96	427.40	287.83	1,196.19	2,593.13

[•] Including commerce and services.

[a] Includes IFCT which, strictly speaking, is not a public enterprise.

Table B-2

DEVELOPMENT PROGRAMME/PROJECTS IN INDUSTRY AND MINING

FINANCED BY BUDGET APPROPRIATIONS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Board of Investment									
(Ministry of Industry)	-	-	-	-	2.20	-	-	2.20	2.20
1. Industrial estate survey	-	-	-	-	2.20	-	-	2.20	2.20
Department of Mines/ Department of Land Resources	5.59	20.89	31.54	58.02	35.92	44.60	45.70	126.22	184.24
1. Underground water exploration and development	0.90	15.00	19.75	35.65	23.32	30.00	30.00	83.32	118.97
2. Non-metallic minerals survey	0.36	0.60	0.40	1.36	5.00	0.60	0.70	1.80	3.16
3. Copper-ore survey	0.23	-	-	0.23	1.64	-	-	1.64	1.87
4. Promotion of mining production, Mineral Development Centre	1.44	2.21	3.03	6.68	2.93	4.00	5.00	11.93	18.61
5. Geological survey	0.86	2.38	4.30	7.54	7.53	10.00	10.00	27.53	35.07
6. Iron-ore survey	1.80	0.70	4.06	6.56	-	-	-	-	6.56
Department of Industrial Promotion	1.23	2.12	2.46	5.81	14.98	20.87	26.21	62.06	67.87
1. Small-scale Industries Services Institute	1.23	2.12	2.46	5.81	4.05	9.87	15.21	29.13	34.94
a. Raw materials survey & research	0.56	1.48	1.62	3.66	2.68	-	-		
b. Industrial promotion	0.45	0.64	0.72	1.81	1.14	9.87	15.21	29.13	34.94
c. Industrial Design Centre	0.22	-	0.12	0.34	0.23	-	-		

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
2. Industrial credit for small scale industries	-	-	-	-	10.00	10.00	10.00	30.00	30.00
3. Marketing service for Thai handicrafts	-	-	-	-	0.93	1.00	1.00	2.93	2.93
Department of Industrial Works	0.23	0.33	0.26	0.82	1.60	11.60	0.30	13.50	14.32
1. Productivity centre	0.23	0.33	0.26	0.82	0.30	0.30	0.30	0.90	1.72
2. Industrial estate	-	-	-	-	-	10.00	-	10.00	10.00
3. Wood fibre survey for paper production	-	-	-	-	1.30	1.30	-	2.60	2.60
Department of Science	3.37	5.25	3.93	12.55	0.80	0.90	1.00	2.70	15.25
1. Research programme	1.65	1.23	0.68	3.56	0.80	0.90	1.00	2.70	6.26
2. Chemical research and analysis	0.34	0.81	0.63	1.78	-	-	-	-	1.78
3. Biological research and analysis	0.89	0.85	0.77	2.51	-	-	-	-	2.51
4. Physical and engineering research and analysis	0.49	2.36	1.85	4.70	-	-	-	-	4.70
National Research Council									
1. Technological Research Institute	-	-	-	-	-	6.50	7.81	14.31	14.31
Public Enterprises (Total)	220.04	228.81	295.08	743.93	91.21	98.09	45.21	234.51	978.44
1. Battery Organization	-	-	2.50	2.50	0.23	-	-	0.23	2.73

Items	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
2. Canned Food Organization	18.55	24.36	40.97	83.88	9.66	5.50	2.50	17.66	101.54
3. Tanning Organization	1.00	1.00	0.60	2.60	0.30	0.81	-	1.11	3.71
4. Textile Organization	-	-	41.20	41.20	11.00	37.56	15.71	64.27	105.47
5. Thai Paper Mill	-	0.20	0.50	0.70	0.50	0.50	0.50	1.50	2.20
6. Fang Oil Refinery	12.71	16.34	19.11	48.16	13.97	15.0	15.00	43.97	92.13
7. National Economic Development Corporation	162.00	99.75	146.00	407.75	27.02	15.22	4.00	46.24	453.99
8. Chemical Fertilizer Corporation	-	-	-	-	20.00	15.00	-	35.00	35.0
9. Tourist Organization of Thailand	4.00	4.00	6.00	14.00	7.00	7.00	7.50	21.50	35.50
10. Pharmaceutical Factory	-	-	-	-	1.53	1.50	-	3.03	3.03
11. Bang Jark Oil Refinery	11.78	51.00	-	62.78	-	-	-	-	62.78
12. Fuel Oil Organization	-	26.16	-	26.16	-	-	-	-	26.16
13. Public Warehouse Organization	5.00	1.00	-	6.00	-	-	-	-	6.00
14. Glass Organization	5.00	5.00	7.90	17.90	-	-	-	-	17.90
15. Ceramics Factory	-	-	0.30	0.30	-	-	-	-	0.30
16. Sugar Factory (Chonburi)	-	-	30.00	30.00	-	-	-	-	30.00
Grand Total	230.46	257.40	333.27	821.66	146.66	182.56	126.23	455.45	1,276.58

Table B-3

PROJECTS IN INDUSTRY AND MINING FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
1. Public enterprise									
Weaving Organization (Toyo Menka Kaishi Ltd. supplier's credit to construct textile mill in Pisanuloke)	—	—	10.00	10.00	98.50	26.00	—	124.50	134.50
2. Private enterprise (Gov't guaranteed)									
I.F.C.T.									
IBRD	—	—	—	—	52.50	52.50		105.00	105.00
W. Germany (Kreditanstalt fur Wiederaufbau)	—	—	—	—			—		
Bangkok Jute Mill Co. Ltd. U.S. PL 480 Title II (Local currency loan)	15.00	—	—	15.00	—	—	—	—	15.00
Total	15.00	—	10.00	25.00	151.00	78.50	—	229.50	254.50

Table B-4

PROJECTS IN INDUSTRY AND MINING FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964–1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	2.00	3.00	3.00	8.00
1. Industrial development				
U.N. Special Fund	9.50	8.60	8.60	26.70
1. Institute of Technological Research				
2. Small-Scale Industries Service Institute				
United Nations (ILO)	1.70	1.70	1.70	5.10
1. Cottage industry				
2. Industrial labour force survey				
Colombo Plan	4.00	4.00	4.00	12,00
1. Industrial design centre (Japan)				
Others	5.00	5.00	5.00	15.00
1. Mineral survey, North region (Wermany)				
2. Mining vocational school (W. Germany)				
Total	22.20	22.30	22.30	66.80

Table C-1

SIX YEAR PLAN EXPENDITURES FOR POWER DEVELOPMENT BY FINANCING SOURCE AND BY FISCAL YEAR, 1961—1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
Budget Appropriations	164.13	89.98	248.77	502.88	198.36	264.45	103.25	566.06	1,068.94
Central government	3.23	9.71	29.10	41.95	70.20	134.30	66.00	270.50	312.45
Public enterprises	160.90	80.27	219.76	460.93	128.16	130.15	37.25	295.56	756.49
(For development only)	(93.90)	(49.30)	(126.80)	(270.00)					
Foreign Loans	330.97	581.74	602.80	1,515.51	551.99	300.38	110.14	962.51	2,478.02
Central government	-	-	-	-	-	60.00	50.00	110.00	110.00
Public enterprises	330.97	581.74	602.80	1,515.51	551.99	240.38	60.14	852.51	2,368.02
Foreign Grants									
(Central government)	48.95	21.32	99.00	169.27	0.60	8.20	9.90	24.70	193.97
Own Resources									
(Public enterprises)	130.79	91.62	212.71	344.12	113.46	69.00	61.90	244.36	588.48
Total	674.84	748.66	1,072.28	2,531.78	870.41	642.03	285.19	1,797.63	4,329.41

Table C-2

DEVELOPMENT PROGRAMME/PROJECTS IN POWER

FINANCED BY BUDGET APPRORIATIONS, BY FISCAL YEAR, 1961—1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
National Energy Authority	3.23	9.71	29.01	41.95	70.20	134.30	66.00	270.50	312.45
1. Electric power demand, survey and plans	0.38	0.70	0.84	1.92	0.95	2 10	3.00	6.05	7.97
2. Lower Mekong basin reconnaissance	1.95	1.60	1.48	5.03	1.38	1.70	1.80	4.88	9.91
3. Nam Pong project	-	3.64	16.70	20.34	10.92	34.00	4.00	48.92	69.26
4. Nam Poong project	-	-	4.66	4.66	42.62	52.00	-	94.62	99.28
5. Pa Mong project	-	-	0.80	0.80	2.25	2.00	2.20	6.72	7.52
6. Nakornsrithamrath electricity development	0.30	0.33	0.49	1.12	0.24	2 50	5.00	7.74	8.86
7. Pattani river project	-	0.69	2.17	2.86	11.57	40.00	50.00	101.57	14.43
8. Water power source, survey and statistics	0.60	2.75	1.87	5.22	-	-	-	-	5.22

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Public Enterprises	160.90	80.27	219.76	460.93	128.16	130.15	37.25	295.56	756.49
1. Yanhee Electricity Authority	98.50	41.10	67.84	207.44	28.00	-	-	28.00	235.44
2. Metropolitan Electricity Authority	30.00	15.00	65.44	110.44	-	-	-	-	110.44
3. Northeastern Electricity Authority	-	-	-	-	46.46	78.65	13.10	138.21	138.21
4. Provincial Electricity Board	12.40	5.97	49.70	68.07	44.50	48.50	21.15	114.15	182.22
5. Lignite Authority	20.00	18.20	36.78	74.98	9.20	3.00	3.00	15.20	90.18
Reserve	-	-	-	-	-	5.00	5.00	10.00	10.00
Total	164.13	89.98	248.77	502.88	198.36	264.45	103.25	566.06	1,068.94

Table C-3

PROJECTS IN POWER FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961–1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand total
	1961	1962	1963		1964	1965	1966		
Public Enterprises									
1. Yanhee Electricity Authority	236.78	481.17	334.88	1,052.83	197.59	35.70	-	233.29	1,286.12
IBRD	207.47	348.05	244.58	800.10	197.59	35.70	-	233.29	1,033.39
U.S. (Eximbank)	29.31	133.12	90.30	252.73	-	-	-	-	252.73
2. Metropolitan Electric Authority									
U.S. (DLF)	94.19	73.12	100.80	268.11	82.77	-	-	82.77	350.88
3. Lignite Authority	-	27.45	157.84	185.29	85.09	2.80	-	87.89	273.18
Austria - Consortium of Elin-Union A.G. & Waagner Biro A.G. (Supplier's credit) for Krabi power plant									
4. Northeast Electricity Authority									
W. Germany (Kreditanstalt fur Wiederaufbau)									
Nam Pong multi-purpose project	-	-	9.28	9.28	89.31	88.26	23.18	200.75	210.03

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
5. Prospective (U.S. AID, West Germany)					97.23	173.62	86.96	357.81	357.81
a. State enterprises									
Yanhee, first stage, distribution system					39.69	26.47	-	66.16	66.16
South region, Krabi, distribution system					32.54	45.78	20.37	98.69	98.69
Northeast distribution system, including 66 KV line					25.00	41.37	16.59	82.96	82.96
b. Central Government									
Pattani project					-	60.00	50.00	110.00	110.00
Total	330.97	581.74	602.80	1,515.51	551.99	300.38	110.14	962.51	2,478.02

TABLE C-4

PROJECTS IN POWER FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964 – 1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	2.00	2.00	2.00	6.00
1. Power training				
U.N. Special Fund	2.60	3.20	3.90	9.70
1. Mekong basin survey				
Colombo Plan	1.00	1.00	2.00	4.00
1. Water power survey				
Other	1.00	2.00	2.00	5.00
Total	6.60	8.20	9.90	24.70

Table D-1

SIX YEAR PLAN EXPENDITURES FOR DEVELOPMENT OF COMMUNICATIONS AND TRANSPORTATION BY FINANCING SOURCE AND BY FISCAL YEAR, 1961-1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
Budget Appropriations	456.05	515.50	630.00	1,601.55	980.99	1,362.73	1,558.30	3,902.02	5,503.57
Central government	359.28	462.92	526.68	1,348.88	716.57	987.13	1,391.00	3,094.70	4,443.58
Public enterprises	96.77	52.58	103.32	252.67	264.42	375.60	167.30	807.32	1,059.99
(For development only)	(64.90)	(42.60)	(87.10)	(194.60)					
Foreign Loans	115.00	91.00	9.00	215.00	473.40	677.10	863.10	2,013.60	2,228.60
Central government	80.00	54.00	5.00	139.00	157.70	351.40	688.50	1,197.60	1,336.60
Public enterprises	35.00	37.00	4.00	5.00	315.70	325.70	174.60	816.00	891.00
Foreign Grants (Central government)	164.90	271.93	312.09	748.50	147.00	122.30	107.90	377.20	1,125.25
Own Resources (Public enterprises)	138.00	220.00	302.00	660.00	379.99	177.11	155.29	712.39	1,372.39
Total	873.14	1,098.43	1,253.03	3,224.60	1,981.38	2,339.24	2,684.59	7,005.21	10,229.81

Table D - 2

DEVELOPMENT PROGRAMME/PROJECTS IN COMMUNICATIONS AND TRANSPORTATION

FINANCED BY BUDGET APPROPRIATIONS, BY FISCAL YEAR, 1961—1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Highways Department	253.82	323.86	426.34	1,004.02	503.86	738.23	1,200.62	7,442.71	3,446.73
1. Highway equipment procurement					24.95	25.00	25.00	74.95	2,692.88
2. Highway feasibility surveys	31.48	27.87	82.54	141.47	71.90	518.00	948.00	1,813.57	
3. Highway construction and improvement	167.65	246.52	248.30	662.47	275.67				
4. Bridge construction	13.79	17.98	13.80	45.57	18.30	20.00	20.00	58.30	103.87
5. Feeder roads construction	40.90	31.49	61.20	133.59	78.04	130.00	165.00	373.04	506.63
6. Highway training centre	-	-	-	-	-	5.23	2.26	7.85	7.85
7. Eight-year highway construction programme	-	-	20.50	20.50	-	-	-	-	20.50
8. Reserve					35.00	40.00	40.00	115.00	115.00
Irrigation Department	-	-	-	-	16.32	31.80	36.50	84.69	84.69
1. Road construction, Chainat-Singburi-Angthong ª	-	-	-	-	4.17	6.80	10.00	20.79	20.97

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
2. Road construction, Chao Phrays Dam area	-	-	-	-	5.59	10.00	12.00	27.59	27.59
3. Road construction, Rangsit-Nakornnayok	-	-	-	-	4.86	9.00	8.50	22.36	22.36
4. Road construction, Petchburi irrigation project	-	-	-	-	1.77	6.00	6.00	13.77	13.77
Ministry of Communication	-	3.50	3.70	7.20	3.70	2.60	1.60	7.90	15.10
(Office of the Under-Secretary)									
1. Expansion of overhaul and maintenance base	-	3.50	3.70	7.20	3.70	2.60	1.60	7.90	15.10
Civil Aviation Department	37.18	60.48	57.93	155.59	106.77	104.10	66.20	277.07	432.66
1. Provincial airports construction and improvement	-	-	-	-	20.00	23.00	15.00	58.00	58.00
2. Aeronautical radio services	3.57	5.46	14.44	23.47	17.92	8.10	1.20	27.22	50.69
3. Eastern runway expansion, Bangkok airport	28.46	35.10	15.24	78.80	23.58	23.00	-	46.58	125.38
4. Second commercial airport survey land costs, preliminary engineering	-	-	-	-	45.27	50.00	50.00	145.27	145.27
5. Aeronautial meteorology	-	3.26	3.26	6.52	-	-	-	-	6.52
6. Improvement of air traffic control office	5.15	16.66	24.99	46.80	-	-	-	-	468.0

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Post & Telegraph Department	68.28	75.08	37.91	181.72	79.75	75.20	78.10	233.05	414.32
1. Expansion Bangkok, Dhonburi postal service	2.34	3.30	-	5.64	18.46	10.70	3.60	32.76	38.40
2. Extension of provincial postal services	3.10	5.72	-	8.82	12.40	18.60	18.60	49.60	58.42
3. Improvement and extension, local service	6.41	7.34	-	13.75	-	-	-	-	13.75
4. Telegraph system development	56.43	58.72	37.80	153.06	29.68	35.0	41.70	106.38	106.38
5. Telex services					17.18	8.8	8.90	34.88	34.88
6. Radio telegraphic system development					2.03	2.10	5.30	9.43	9.43
Harbour Department	-	-	0.80	0.80	6.10	35.20	7.98	49.28	50.08
1. Survey of inland waterways	-	-	0.80	0.80	3.60	3.00	3.00	9.60	10.40
2. Clearing sandbar at Kangtang harbour	-	-	-	-	2.50	32.20	4.98	39.68	39.68
Public Enterprises (Total)	96.77	52.58	103.32	252.67	264.42	375.60	167.30	807.32	1,059.99
National Telecommunications Organization	-	-	-	-	18.73	100.00	-	118.73	118.73
1. Microwave system	-	-	-	-	18.73	100.00	-	118.73	118.73
Telephone Organization of Thailand	-	12.00	34.0	46.0	31.42	-	-	31.42	77.42

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
1. Provincial telephone services development		12.00	34.00	46.00	23.42	-	-	23.42	77.42
2. Improvement of telephone facilities in preparation for telecommunications system					8.00	-	-	8.00	
Port Authority of Thailand	39.92	30.83	24.62	95.37	44.20	64.70	81.00	189.90	285.27
1. Clearing sandbar and maintenance, Chao Phraya river	39.92	30.83	24.62	95.37	31.23	23.80	23.80	78.83	285.27
2. Clearing sandbar, Pattani channel					12.97	1.10	1.10	15.17	
3. Engineering survey of Sriraja port					-	25.00	40.00	65.00	
4. Clearing sandbar, Songkla port					-	14.80	1.80	16.60	
5. Clearing sandbar, Bhuket port					-	-	14.30	14.30	
State Railway of Thailand	34.40	5.10	32.40	71.90	134.79	204.00	79.40	418.19	490.09
1. Construction of Paholyodhin junction	34.40	5.10	32.40	71.90	3.00	-	-	3.00	490.09
2. Railroad construction, Kangkoi-Buoyai					86.79	50.30	33.40	170.49	
3. Diesel engine replacement improvement and development of railway system					45.00	153.70	46.00	244.70	

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Express Transport Organization		-	9.00	9.00	5.70	3.90	3.90	13.50	22.50
1. Truck replacement		-	9.00	9.00	5.70	3.90	3.90	13.50	22.50
Thai Airways Company Ltd.	3.00	3.00	0.70	6.70	27.58	3.00	3.00	33.58	40.28
1. Payment for purchase of S.A.S. shares	3.00	3.20	0.70	6.70	25.82	-	-	25.28	31.98
2. Subsidy		-	-	-	2.30	3.00	3.00	8 30	8.30
Bangkok Dock		-	-	-	2.00	-	-	2.00	2.00
1. Purchase of labour-saving machine		-	-	-	2.00	-	-	2.00	2.00
Thai Maritime Navigation	19.45	1.65	2.60	23.70	-	-	-	-	23.70
Total	456.05	515.50	630.00	1,601.55	980.99	1,362.73	1,558.30	3,902.02	5,503.57

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* Responsibility for this project has been assigned by the Cabinet to the Highways department

Table D-3

PROJECTS IN COMMUNICATIONS AND TRANSPORTATION FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
Department of Highways	80.00	6.50	5.00	91.50	157.70	351.40	688.50	1,197.60	1,289.10
U.S. (AID-ICA)	80.00	6.50	5.00	91.50					
(Eximbank)					96.70	72.37	224.97	394.04	485.54
IBRD					61.00	179.03	313.53	553.56	553.56
Prospective									
Feeder roads					-	100.00	150.00	250.00	250.00
Public Enterprises									
1. State Railway of Thailand	-	35.00	4.00	39.00	231.70	190.20	117.10	539.00	578.00
IBRD Reconstruction and development					36.10	165.90	104.60	306.60	306.60
U.S. AID									
PL 480 (Title III)	-	35.00	-	35.00	-	-	-	-	35.00
Japanese locomotives and parts paid in yen									
W. Germany (Kreditanstalt fur Wiederaufbau)									
Kaengkoi - Buayai	-	-	4.00	4.00	195.60	24.30	12.50	232.40	236.40
2. Port Authority of Thailand									
U.S. (DLF)	35.00	2.00	-	37.00	-	-	-	37.00	37.00
Purchase of dredger for Port of Bangkok									
3. National Telecommunications Organization	-	47.50	-	47.50	84.00	57.50	57.50	199.00	246.50
Microwave system									
U.S. AID (ICA)	-	47.50	-	47.50	63.00[a]	-	-	63.00	110.50
Prospective (W. Germany for Zones 4 and 5)					21.00	57.50	57.50	136.00	136.00

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
4. Thai Maritime Navigation Prospective loan for procurement of two ships from Japan	-	-	-	-	-	78.00	-	78.00	78.00
Total	115.00	91.00	9.00	215.00	473.40	677.10	863.10	2,013.60	2,228.60

[a] Included in error in this table since sum actually represents estimated U.S. grant assistance from prior programme.

Table D - 4

PROJECTS IN COMMUNICATIONS AND TRANSPORTATION FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964-1966

(In millions of baht)

Item	1964	1965	1966	Total 1964-1966
United States	113.00	79.00	78.00	270.00
1. Economic Assistance				
(i) Provincial road survey				
(ii) Airport services				
(iii) Second commercial airport survey				
2. National defense assistance				
(i) Provincial road				
U.N. Special Fund	16.50	23.80	9.40	49.70
1. Telecommunication training centre				
2. Highway training centre				
3 Engineering survey, Sriracha port				
4. Sandbar survey of Chao Phraya estuary channel				
United Nations	1.50	1.50	1.50	4.50
Colombo Plan	11.00	12.00	13.00	36.00
1. Machinery equipment centre, South region (Japan)				
2. Machinery equipment centre, North region				
3. Highway survey				
Others	5.00	6.00	6.00	17.00
Total	147.00	122.30	107.90	377.20

Table E-1

SIX YEAR PLAN EXPENDITURES FOR DEVELOPMENT OF COMMUNITY FACILITIES AND SOCIAL WELFARE BY FINANCING SOURCE AND BY FISCAL YEAR, 1961-1966

(In millions of baht)

Source	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Budget Appropriations	165.58	207.49	264.30	637.37	398.31	615.40	673.85	1,687.56	2,324.93
Central government	104.58	112.49	129.30	346.37	282.31	447.40	479.85	1,209.56	1,555 93
Local governments	61.00	95.00	135.00	291.00	116.00	168.00	194.00	478.00	769.00
Foreign Loans (Central government)	12.00	91.00	339.00	442 00	704.25	68.00	—	475.25	917.25
Foreign Grants (Central government)	2.24	4.07	9.00	15.31	83.50	78.50	79.30	241.30	256.61
Own Resources (Local governments)	130.00	231.00	267.00	628.00	374.00	445.00	522.00	1.341.00	1.969 00
Total	309.82	533.56	879.30	1,722.68	1,263.06	1,206.90	1,275.15	3,745.11	5,467.79

Table E-2

DEVELOPMENT PROGRAMMES/PROJECTS IN COMMUNITY FACILITIES AND SOCIAL WELFARE FINANCED BY BUDGET APPROPRIATIONS, BY FISCAL YEAR 1961-1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Ministry of Interior (Office of the Under-Secretary)									
1. Rural development programme	-	-	-	-	-	50.00	50.00	100.00	100.00
Public Welfare Department	26.46	43.20	50.33	119.99	121.44	194.50	194.05	509.99	629.98
1. Self-help land settlement	13.64	15.35	15.42	44.41	20.62	21.50	23.00	65.12	109.53
2. Hill-tribes development centre	-	-	-	-	0.51	1.00	2.00	3.51	3.51
3. Self-help land settlement, South region	-	-	6.81	6.81	18.96	23.00	25.00	66.96	73.77
4. Subsidized housing for low income groups and slum clearance	-	-	-	-	49.00	65.00	72.00	186.00	186.00
5. Assistance to children and juveniles	5.38	9.76	12.21	27.35	13.73	16.00	17.00	46.73	74.08
6. Occupational promotion and labour protection	0.96	1.69	2.41	5.06	3.55	5.00	6.00	14.55	19.61
7. Social security programme	-	-	-	-	-	45.00	28.00	73.00	73.00
8. Assistance to certain groups of people	2.89	11.16	8.49	22.54	8.90	11.00	13.00	32.90	55.44
9. Assistance to old-age, crippled and invalids	1.95	3.14	2.83	7.92	3.41	3.70	4.00	11.11	19.03
10. Assistance to people in distress	1.64	2.10	2.16	5.90	2.13	2.50	3.00	7.63	13.53

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
11. Youth centre at Huey Khuang	-	-	-	-	0.18	0.20	0.25	0.63	0.63
12. Social welfare services	-	-	-	-	0.45	0.60	0.80	1.85	1.85
Local Administration Department	61.00	95.00	135.00	291.00	125.15	182.00	215.15	522.15	813.15
1. People's irrigation works	-	-	-	-	6.15	8.00	9.00	23.16	23.15
2. Village roads	-	-	-	-	3.00	6.00	12.00	21.00	21.00
3. Assistance to local governments	61.00	95.00	135.00	291.00	74.70	100.00	120.00	294.70	769.00
4. City planning (Bangkok and Thonburi)					41.30	68.00	74.00	183.30	
Department of Land	3.00	8.98	8.92	20.90	5.57	13.70	17.70	36.97	57.87
1. Land allocation, small plots	3.00	7.18	7.08	17.26	2.24	3.90	4.50	10.64	37.40
2. Land allocation, large plots					-	4.30	5.20	9.50	
3. Aerial photography	-	1.80	1.84	3.64	3·33	5.50	8.00	16.83	20.47
Community Development Department	16.37	20.53	25.00	61.90	37.69	50.00	60.00	147.69	209.59
1. National community development programme	16.37	20.53	25.00	61.90	37.69	50.00	60.00	147.69	209.59
Department of Municipal and Public Works	58.75	39.78	45.05	143.58	108.46	125.20	137.10	370.76	514.34
1. Provincial waterworks	26.13	29.74	41.00	96.97	61.27	60.20	51.10	172.57	269.54
2. Artesian well drilling	3.00	6.50	4.05	13.55	4.21	5.00	6.00	15.21	28.76
3. Bangkok and Thonburi water works	29.52	3.54	-	33.06	42.98	60.00	80.00	182.98	216.04
Total	164.58	207.49	264.30	637.37	398.31	615.40	673.85	1,686.56	2,324.93

Table E-3

PROJECTS IN COMMUNITY FACILITIES AND SOCIAL WELFARE FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand Total
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	
Department of Public and Municipal Works									
France									
Degremont (supplier's credit)									
For improvement of Bangkok-Thonburi water supply and distribution systems									
Project I ($19,357,378)									
Project II ($24,324,323)									
Total	12.00	91.00	339.00	442.00	407.25	68.00	-	475.25	917.25

Table E-4

PROJECTS IN COMMUNITY FACILITIES AND SOCIAL WELFARE FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964-1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	75.00	70.00	70.00	215.00
1. Economic assistance				
(i) Community development				
(ii) Local government				
(iii) Rural development				
2. National security assistance				
(i) Rural development				
United Nations (I.L.O.)	1.50	1.50	1.50	4.50
1. Labour force promotion				
2. Community development				
Colombo Plan	2.00	2.00	2.80	6.80
Others	5.00	5.00	5.00	15.00
1. Hill-tribe development centre (private foundation)				
2. Aerial photography (W. Germany)				
3. Community development (SEATO)				
Total	83.50	78.50	79.30	241.30

Table F-1

SIX YEAR DEVELOPMENT PLAN EXPENDITURES FOR DEVELOPMENT OF PUBLIC HEALTH BY FINANCING SOURCE AND BY FISCAL YEAR, 1961 - 1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1955	1966	1964-1966	Total
Budget Appropriations (Central government) [a]	38.80	84.47	105.94	229.21	186.16	215.94	244.58	646.68	875.98
Foreign Loans (Central government)	-	-	-	-	-	69.64	75.42	145.06	145.06
Foreign Grants (Central government)	32.23	70.84	57.30	160.37	52.60	61.60	68.60	182.80	343.17
Total	71.03	155.31	163.24	389.58	238.76	347.18	388.60	974.54	1,364.12

[a] Excludes appropriations to Counterpart Fund of approximately 62 million baht in 1961 - 1963 and 92 million baht in 1964-1966.

Table F-2

DEVELOPMENT PROGRAMME/PROJECTS IN PUBLIC HEALTH FINANCED BY BUDGET APPROPRIATIONS, BY FISCAL YEAR, 1961 – 1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Office of the Under-Secretary (Ministry of Public Health)	4.60	9.20	10.40	24.20	20.31	21.00	21.00	62.31	86.51
1. Malaria control and eradication [a]	4.50	9.00	10.00	23.50	20.00	20.20	20.00	20.00	83.50
2. Elephantiasis control and eradication	0.10	0.20	0.40	0.70	0.31	1.00	1.00	2.31	3.10
Department of Medical Services	13.50	23.93	40.87	78.30	78.54	83.01	94.36	255.91	334.21
1. Provincial hospitals	6.83	10.79	18.26	36.24	42.67	53.83	61.91	158.41	194.65
2. Mental hospitals	3.62	4.26	9.52	17.40	10.90	12.61	11.68	35.19	52.59
3. Women & children's hospitals	1.43	4.85	6.70	12.98	7.03	6.58	4.07	17.68	30.66
4. Lerdsin Hospital	1.28	2.01	4.03	7.32	10.75	4.88	6.00	21.63	28.95
5. Buddhist Monk's Hospital	0.31	0.10	1.00	1.41	0.61	0.61	0.61	1.83	3.24
6. Nursing and midwifery school	0.03	1.92	1.00	2.95	6.58	4.50	4.09	15.17	18.12
7. National Cancer Institute	-	-	-	-	-	-	6.00	6.00	6.00

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Department of Health	20.10	50.60	50.78	121.48	81.07	107.75	123.95	312.77	434.25
1. Prevention of contagious diseases	2.88	3.72	3.72	10.32	5.14	5.14	5.17	15.99	26.31
2. Yaws eradication	2.62	3.49	3.50	9.61	7.15	7.16	7.16	21.47	31.08
3. Tuberculosis control	2.59	4.17	6.70	13.46	11.83	11.70	11.83	35.36	48.82
4. Chest clinic	0.36	1.29	1.50	3.15	2.87	4.44	5.59	12.90	16.05
5. Leprosy eradication	1.80	22.24	16.30	40.34	18.72	19.47	20.91	59.10	99.44
6. Child and mother welfare	3.42	6.00	7.05	16.47	7.21	8.54	10.42	26.17	42.64
7. Scholarships for midwifery nursing school	0.43	0.48	0.43	1.34	1.34	1.81	2.30	5.45	6.79
8 Rural nutrition	0.38	0.76	0.86	2.00	1.53	1.53	1.72	4.78	6.78
9. Health centre improvement and expansion	3.65	5.60	7.10	16.35	18.42	27.54	34.15	80.11	96.46
10. School health improvement	0.09	0.44	0.62	1.15	3.61	4.55	5.95	14.11	15.26
11. Prevention of small pox	1.00	1.00	1.00	3.00	0.94	0.94	0.94	2.82	5.82
12. Sanitation and water supply [b]	0.88	1.41	2.00	4.29	2.31	4.84	7.15	14.30	18.59
13. Clean water project	-	-	-	-	-	10.00	10.00	20.00	20.00
Department of Medical Sciences	0.60	0.74	3.89	5.23	6.24	4.18	5.27	15.69	20.92
1. National Public Health Laboratory	0.60	0.74	3.89	5.23	6.24	4.18	5.27	15.69	20.92
Total	38.80	84.47	105.94	229.21	186.16	215.94	244.58	646.68	875.89

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[a] Excludes appropriations to Counterpart Fund of 44.44 milion baht in 1961-1963 and 62.00 million baht in 1964-1966.

[b] Excludes appropriations to Counterpart Fund of 15.14 millon baht in 1961-1963 and 30.00 million baht in 1964-1966.

Table F-3

PROJECTS IN PUBLIC HEALTH FINANCED BY FOREIGN LOANS, BY FISCAL YEAR, 1961-1966

(In millions of baht)

Item	First Half			Total 1961-1963	Second Half			Total 1964-1966	Grand Total
	1961	1962	1963		1964	1965	1966		
Ministry of Health (Office of the Under-Secretary of State)									
Malaria eradication (Prospective)	-	-	-	-	-	69.64	75.42	145.06	145.06
Local currency						45.82	45.78	91.60	91.60
Foreign exchange						23.82	29.64	53.46	53.46

Table F - 4

PROJECTS IN PUBLIC HEALTH FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR, 1964-1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	33.00	42.00	46.00	121.00
1. Malaria control				
2. Rural sanitation development				
United Nations (WHO, UNICEF)	3.60	3.60	3.60	10.80
1. Nursing school				
2. Yaws eradication				
3. Tuberculosis control				
4. Rural nutrition				
5. Mother and child's welfare				
Colombo Plan	8.00	8.00	10.00	26.00
1. Provincial hospitals				
2. Lerdsin Hospital				
3. Women and Children's hospital				
Others	8.00	8.00	9.00	25.00
1. Neurological research (W. Germany)				
2. Chest clinic (private foundation)				
2. Institute of National Public Health				
Total	52.60	61.60	68.60	182.80

Table G-1

SIX YEAR PLAN EXPENDITURES FOR DEVELOPMENT OF PUBLIC EDUCATION BY FINANCING SOURCE AND BY FISCAL YEAR, 1961-1966

(In millions of baht)

Source	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
Budget Appropriations (Central government)	116.94	196.86	246.18	559.98	340.83	387.10	441.31	1,169.24	1,729.22
Foreign Loans (Central government)	–	–	–	–	–	122.50	310.10	432.60	432.60
Foreign Grants (Central government)	61.26	54.06	9.95	125.27	60.20	71.30	72.70	204.20	329.47
Total	178.20	250.92	256.13	685.25	401.03	580.90	824.11	1,806.04	2,491.29

Table G-2

DEVELOPMENT PROGRAMME/PROJECTS IN PUBLIC EDUCATION FINANCED BY BUDGET APPROPRIATION, FISCAL YEAR 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
1. University education	20.46	36.20	53.88	110.54	130.80	146.83	172.38	450.01	560.55
a. Chiengmai University	-	-	-	-	25.62	22.63	36.25	94.50	94.50
b. Northeastern University	-	-	-	-	15.00	15.00	12.00	42.00	42.00
c. Kasetsart University	8.10	12.07	16.22	36.39	8.43	9.27	10.20	27.90	64.29
d. Chulalongkorn University	1.04	1.25	1.05	3.34	28.98	31.88	35.07	95.93	99.27
e. Thamasart University	-	2.95	4.94	7.90	10.70	11.77	12.95	35.42	43.32
f. University of Medical Sciences	11.32	19.93	31.66	62.91	39.32	43.25	47.58	130.15	193.60
g. Silpakorn University	-	-	-	-	2.75	3.03	3.33	9.11	9.11
h. Institute of National Development Administration	-	-	-	-	-	-	15.00	15.00	15.00
2. Teachers' training	9.46	10.54	10.55	30.55	22.96	25.26	27.79	76.01	106.56
3. Secondary and pre-university education	21.18	31.33	37.08	89.59	19.38	21.32	23.45	64.15	153.74
4. Kindergarten and primary education	49.78	83.42	111.35	244.55	127.68	140.45	154.50	422.63	667.18
5. Vocational education	11.75	25.59	32.15	69.49	36.94	42.37	58.33	144.64	214.13
6. Office of the Under-Secretary (Ministry of Education)	4.31	9.78	1.17	15.26	3.07	3.87	4.86	11.80	27.06
Total	116.94	196.86	245.18	559.98	390.98	387.10	441.31	1,169.24	1,729.22

Table G-8

PROJECTS IN PUBLIC EDUCATION FINANCED BY FOREIGN LOANS, BY FISCAL YEAR 1961-1966

(In millions of baht)

Item	First Half			Total	Second Half			Total	Grand
	1961	1962	1963	1961-1963	1964	1965	1966	1964-1966	Total
Ministry of Education									
Prospective loans IDA - financed				-	-	112.50	310.10	432.60	432.60
University education				-	-	65.50	64.50	130.00	130.00
Local currency						41.50	40.50	82.00	82.00
Foreign exchange						24.00	24.00	48.00	48.00
Vocational education				-	-	57.00	245.60	302.60	302.60
Local currency						20.00	93.40	113.40	113.40
Foreign exchange						37.00	152.20	189 20	189.20

Table G-4

PROJECTS IN PUBLIC EDUCATION FINANCED BY FOREIGN GRANTS, BY FISCAL YEAR. 1964—1966

(In millions of baht)

Item	1964	1965	1966	Total
United States	3.00	41.00	40.00	114.00
1. Regional education				
2. Vocational education				
3. Chiengmai University				
4. Medical school at Chiengmai				
UN Special Fund	3.60	3.40	2.50	9.50
1. Technical school at Thonburi				
United Nations (UNESCO)	3.00	3.00	3.00	9.00
Colombo Plan	14.00	14.00	14.00	42.00
1. Northeastern University (Canada or New Zealand)				
2. Faculty of Engineering, Chulalongkorn University (U.K.)				
Others	6.60	9.90	13.20	29.70
1. Technical school at Kon Kaen (W. Germany)				
2. Improvement of technical school, northern Bangkok (W. Germany)				
3. Technical school, Tak province (Sweden)				
4. Institute of National Administration Development (Ford Foundation)				
5. Kasetsart University (Rockefeller Foundation)				
Total	60.20	71 30	72.70	204.20

Table H-1

SIX YEAR PLAN UNALLOCATED EXPENDITURES BY FINANCING SOURCE AND BY FISCAL YEAR, 1961-1964

(In millions of baht)

Source	First Half			Total 1961-1963	Second Half			Total 1963-1966	Grand Total
	1961	1962	1964		1964	1965	1966		
Budget Appropriations (Central government)	88.00	131.00	181.00	400.00	150.00	150.00	150.00	450.00	950.0
Foreign Grants[a]	70.33	126.25	164.21	360.79	214.00	136.00	–	350.00	710.79
Total	158.33	257.25	345.21	760.79	364.00	286.00	150.00	800.00	1,560.79

[a] For 1961-1963, U.S. dollar grant aid not included in sector tables; for 1964-1966, estimated withdrawals of U.S. contributions to joint (U.S.-Thai) Counterpart Fund primarily for projects in communications-transportation and public health sectors.

Table 6.4

PROJECTS IN TERTIARY EDUCATION FINANCED BY FOREIGN GRANTS

[illegible]

(In millions of baht)

	[illegible]	[illegible]	[illegible]	Total
United States	1.60	[illegible]	[illegible]	114.00
1. [illegible] education				
2. Vocational education				
3. Chiengmai University				
4. Medical school at Chiengmai				
U.N. Special Fund	1.40	[illegible]	[illegible]	9.80
1. Technical school, Thonburi				
United Nations (UNESCO)	3.00	3.00	3.00	9.00
Colombo Plan	14.00	14.00	14.00	42.00
1. [illegible] (Canada as [illegible])				
2. Faculty of Engineering, Chulalongkorn University (U.K.)				
Others	6.60	9.40	[illegible]	[illegible]
1. Technical school, Khon Kaen (W. Germany)				
2. Improvement of technical school, [illegible] Bangkok (W. Germany)				
3. Technical school, [illegible] province (Sweden)				
4. Institute of [illegible] Administration (Development [illegible] Foundation)				
5. Kasetsart University (Rockefeller Foundation)				
Total	[illegible]	[illegible]	[illegible]	[illegible]

Page		Now reads	Should read
81	para. 75, line 4	interdependent	interdependent;
83	line 3	quality	to quality
83	para. 5, line 2	guant i es	quantities
86	para. 18, line 3	Act.	Act
90	Preserved Food Organization section (vii), line 2	taste	taste.
93	last line	table	tables
95	Table 4, item 2	Processes Food organization	Processed Food Organization
98	para. 2, line 9	wellcoordinated	well coordinated
101	Hydro-electric power, line 4	dringing	bringing
104	para. 6, line 4	benefit	benefits
107	para. 1	Communications,	Communications
120	Table 4, footnote	13	13.)
127	line 1	expandnig needs of the ʌeəɹ	expanding needs of the ever
127	line 2	cimnerang	increasing
128	para. 21, line 3	additonal	additional
131	para. 4, line 13	constructcd	constructed
133	para. 8, sub-para.	deathrate	death rate
134	line 1	estalbish	establish
137	para. 15, line 6	staffis	staff
138	para. 3, line 5	Mis	Mis-
140	line 1	country s	country's
141	line 6	ceosely	closely
144	line 7	"welfare'	"welfare"
144	line 8	"modern'	"modern"
144	line 10	"modern school	"modern schools'
155	para. 8, line 1	idirectly	indirectly
155	para. 8, section d., line 4	b which	by which
156	line 1	enterpris	enterprise
156	line 18	methods	methods,
157	line 4	physical	physical production
157	para. 10, line 10	1966,	1966
157	para. 10, line 21	in 1963,	in 1963
157	para. 14, line 1	transport	transport and
163	para. 17, line 4	are the	the
164	para. 18, line 8	trourist	tourist
166	Table 1, Fang Oil Refinery, col. 4	200,000	20,000

APPENDIX CONTENTS

Table A-4	FOREIG	FOREIGN
Table II footnote, line 2	baht	baht.
Table IV Power, Austria	Supplier s	Supplier's
Table VI item 5, last col.	1961-1966	1964-1966
,, item 5 b.	bills net	bills, net
Table A-2, p. 5, item 16	Chaoh Praya	Chao Phraya
Table A-4, p. 1, item 7	Agriculheval Farm irrigation	credit irrigation
Table D-2, p. 5, footnots	department	Department.

Corrections

Page		Now reads	Should read
b	line 24	fund's	funds
b	line 25	nation s	nation's
e	line 20	1,600 squate	1,600 square meters
1	para. 2, line 2	colletion	collection
2	para. 5, line 11	capital	capita
2	,, line 12	,,	,,
2	,, line 13	persent	present
2	,, line 15	use	use.
4	para. 14, line 7	precent	percent
6	para. 20, line 6	completed	completed.
7	para. 24, line 4	rate	rate
8	para. 25, line 8	conductive	conducive
11	para. 8, line 10	massof	mass of
15	Table 1, footnote, line 1	approriated	appropriated
20	Table 3, caption	1963	1963^{P}
20	,, footnote	Preliminary	^{P}Preliminary.
30	Table caption	Local government	Local governments
38	para. 31, line 12	1963 100	1963=100
52	Subsection (xii), line 4	farmer s	farmer's
52	Subsection (xiv), line 5	limited,	limited;
53	Subsection (xvi), line 2	population	population;
55	Table 2	Fisheries	Fisheries (tons)
56	**Kenaf and jute,** line 1	quality,	quality
58	**iF shery products,** line 2	significanty	significantly
60	Table 4, footnote, line 1	enterprisses	enterprises
61	para. 17, line 3	millionrai	million rai
61	,, ,,	a wait	await
63	para. 22, line 9	phumipol	Phumipol
63	para. 23, line 2	standard	standards
66	para. 28, line 15	tee	the
66	para. 29, line 1	agriclutural	agricultural
66	,, line 7	1996	1966
66	,, line 2	Northeheast	Northeast,
69	para. 40, line 9	.If	If
69	para. 41, line 4	forests	forests;
71	para. 50, line 5	the	The
72	para. 52, line 9	development,	development
72	para. 53, line 7	legal,	legal
72	,, line 7	chara cter	character
72	,, line 9	wellover	well over
75	para. 60, line 8	of and	of the planters, and
75	para. 62, line 1	extention	extension
75	,, line 5	proplem	problem
76	para. 64, line 9	lake	Lake
78	para. 70, line 14	Land	land
78	para. 71, line 10	,,	,,
79	para. 74, section b., line 11	vraious	various
81	para. 74, section e., line 4	wlilbe	will be